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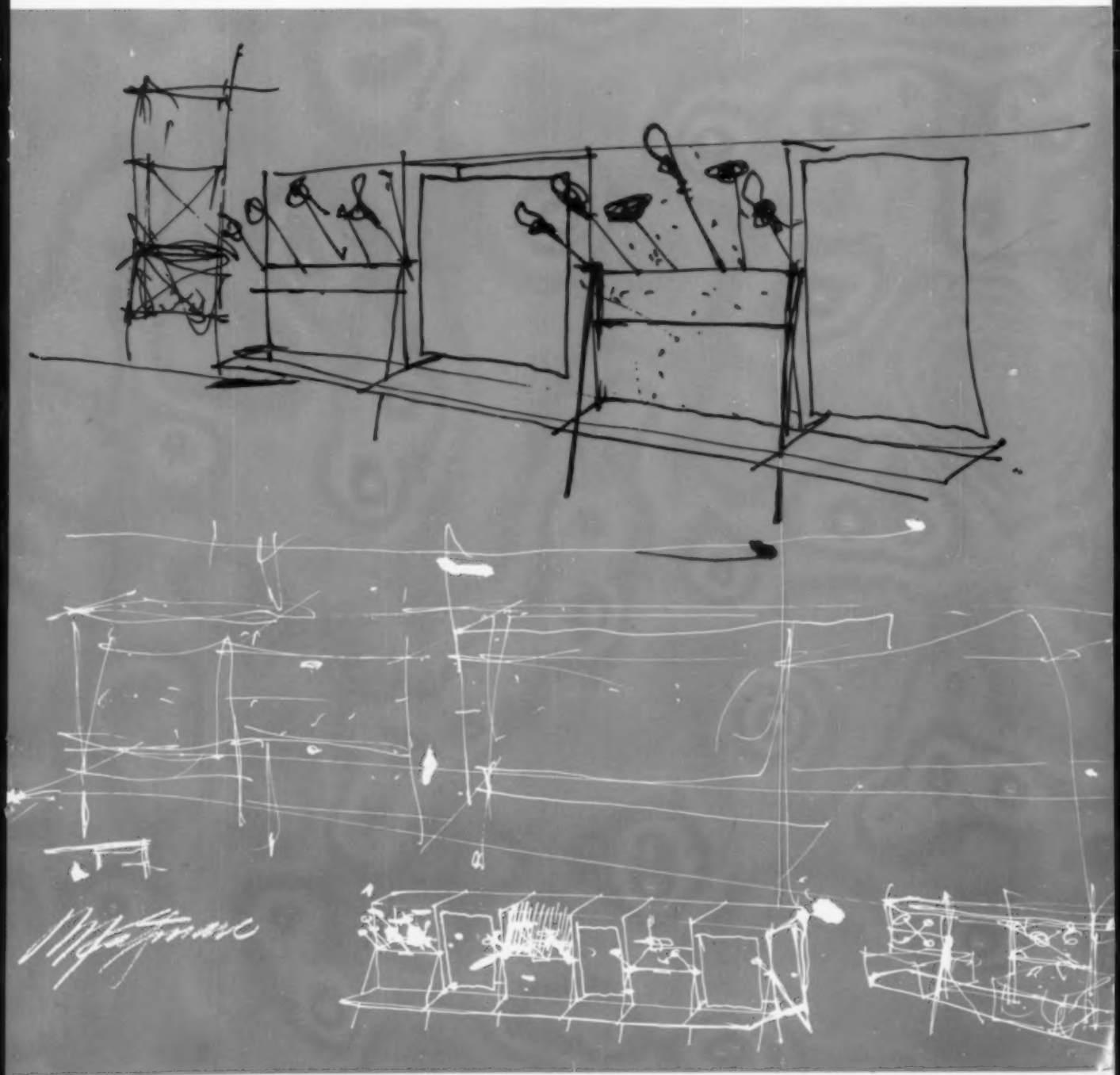

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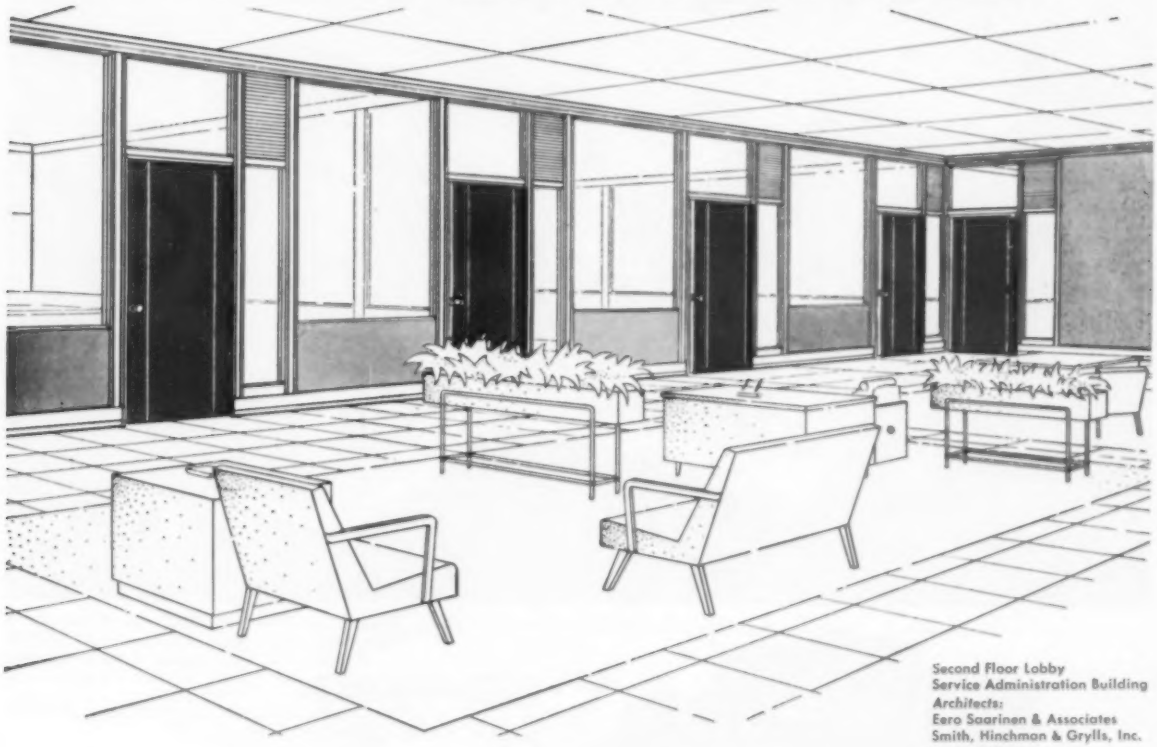

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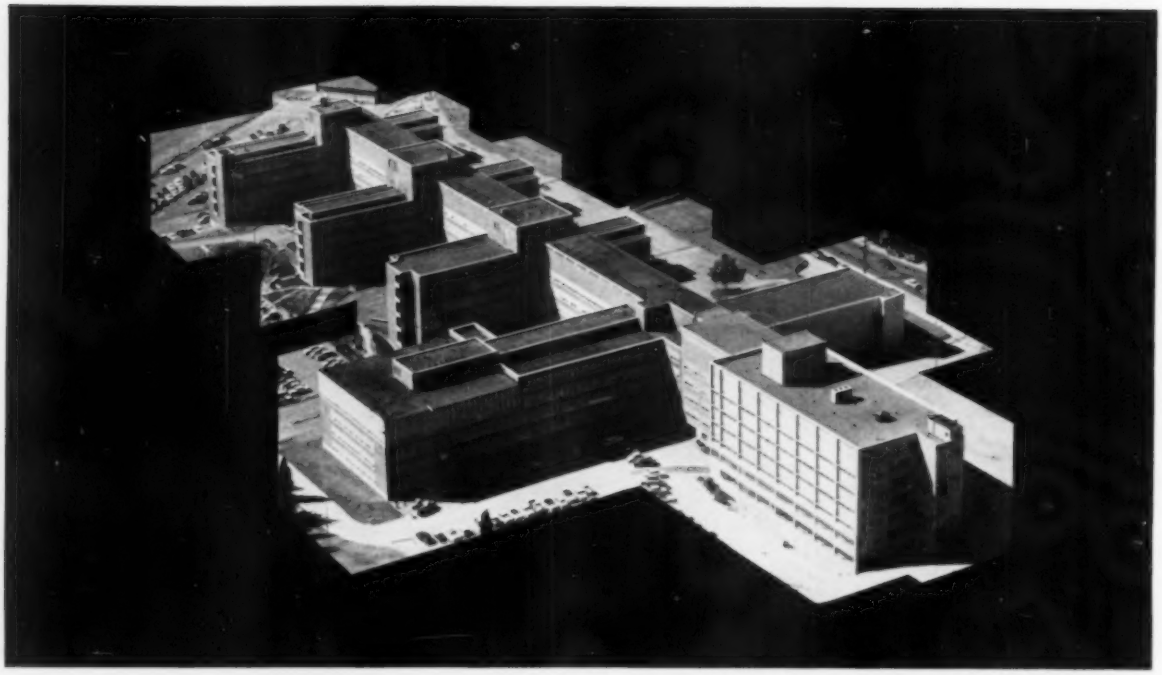

Architects: Narramore, Bain, Brady, and Johanson; McClelland and Jones
Professional Engineers: Bouillon and Griffith
General Contractor: J. C. Boespflug
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It's the Law by Bernard Tomson

P/A Office Practice *article on the Right of a Municipality to Violate its own Zoning Ordinance.*

Can a municipality, in effect, violate its own zoning ordinance? After zoning an area for residential use, may a municipality then, in disregard of its own ordinance, use a part of such area for nonresidential purposes? These are the questions presented in a recent case decided by the Supreme Court of the State of New York.

In 1950, the Incorporated Village of Lloyd Harbor adopted a zoning ordinance restricting the entire Village to private residential use on minimum plots of two acres. This 1950 ordinance changed the previous zoning by completely eliminating business use in the Village. In 1953 the plaintiff, Nehrbas, purchased eight acres of property within the Village and erected a home, which cost, together with improvements to the land, in excess of $80,000. The following year the Village acquired a two-acre parcel diagonally opposite to the property of Nehrbas. It was the intention of the Village to alter a barn located on the parcel and to use the building for various municipal purposes. Nehrbas instituted a legal action to restrain the Village from such action.

The Court held that it was unlawful for the Village to use the building for the storage and maintenance of garbage and highway repair trucks and other vehicles, but ruled that the Village had the legal right to use the premises as offices for the Village, as a meeting place for the Village Trustees, and as a courtroom for the use of the Village Police Justice.

In permitting the limited violation by the Village of its own zoning ordinance, the Court distinguished between municipal functions which it termed private or proprietary and municipal functions which it classified as public or governmental. The Court stated that the collection and disposal of garbage and the maintenance and repair of highways were private or proprietary functions on the part of the municipality and that, therefore, such uses fell within the restriction of the Village's zoning ordinance. On the other hand, it was the opinion of the Court that the use of the premises as offices of the Village and as a courtroom were public or governmental functions to which the zoning ordinance did not apply.

There would seem to be no clear-cut distinction between those municipal functions classified as governmental and those classified as private. The Village, in its argument before the Court, relied on a previous decision of another New York Court (*Stiger* v. *Village of Hewlett Bay Park*, 129 N.Y.S. 238) in which a municipality was permitted to lease land in a residentially zoned area for the purpose of erecting a garage for the storage of village trucks and equipment which were used in connection with the care of the streets. In this case, the Court ruled that the use of the garage was an exercise of a governmental or public function and that, consequently, the Village would be unrestricted by its own zoning ordinance.

The inconsistency in these two decisions is difficult of explanation, unless consideration is given to the differing practical factors raised in each of the cases. In the Nehrbas case, there was evidence that the proposed use of the premises would result in a substantial diminution in the value of surrounding homes. Further, in that case, the Court emphasized that the Village was motivated by the fact that the premises sought to be used could be purchased for an advantageous price and that the Village had other available sites on which to construct premises for the proposed uses. In the Stiger case, however, the Court found that the neighboring residences would sustain no damages as a consequence of the proposed use by the Village, and that the Village had no other area available for the intended use. Differing pragmatic considerations, therefore, led to different conclusions in the two decisions.

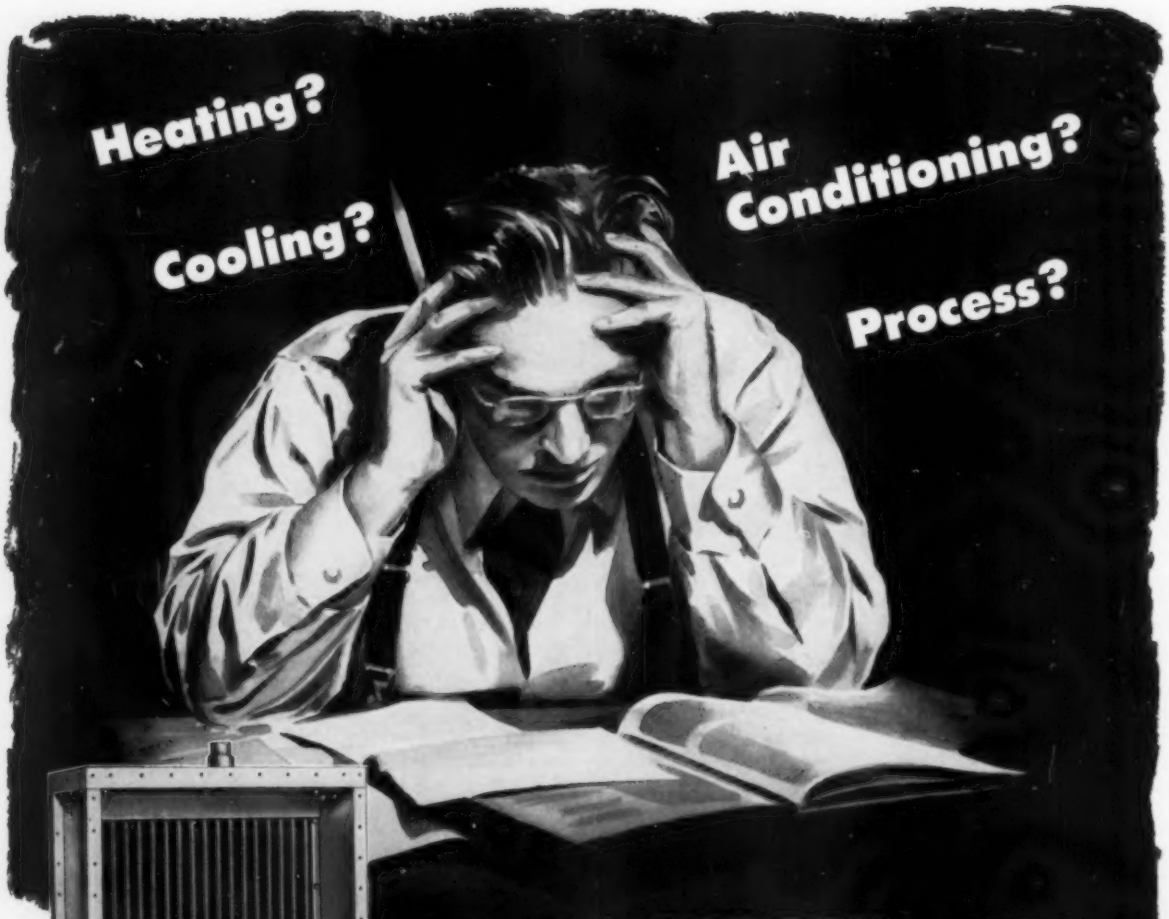
Due to shifting and rapid increases in population, many communities throughout our country have been faced with additional and unexpected responsibilities. Under these circumstances, the apparent tendency of the Courts to give great weight to practical considerations when determining the right of a municipality to violate its own zoning is understandable. In still another New York case (*Hewlett* v. *Town of Hempstead*, 133 N.Y.S. 2d 690), the Court frankly stated the necessity of giving weight to practical factors in determining the legitimacy of the use of property by the municipality.

In that case, the Town had amended its zoning ordinances in order to authorize the erection of an incinerator in an area zoned as a residential district. The Court was faced with the fact that the weight of precedent, through application of the "governmental-proprietary" test, held the collection and disposal of garbage to be a private or proprietary function. If the Court had strictly applied this test, it would have been compelled to hold that it was unlawful for the Village to put the property to the use sought. The Court, however, took into account the pressing need of the community and ruled that under existing circumstances the operation of an incinerator was a governmental, rather than a private, function of the town.

> ". . . . . yet the conditions which exist in a closely-knit, fast-growing township such as the Town of Hempstead, have made it imperative that the Town provide for the disposal of refuse and garbage. It is a matter of public health that offal and garbage be disposed of scientifically and efficiently. Burial of refuse and open dump disposal is no longer permissible and the capital to be supplied for the erection of a large incinerator has become a public responsibility. It it perhaps true that in some places the public disposal of waste is optional, but in the Town of Hempstead with its present population and closely developed territory, it is no longer an optional matter. In such a circumstance, the incineration of garbage is not a proprietary but rather a governmental function. Without it, the community in its present form cannot continue to exist without risk to the general health of its inhabitants."

The concept underlying zoning is the promotion and protection of public welfare and safety by the limitation of property use. The violation or disregard by a municipality of zoning laws previously adopted may be necessary, but is, at the same time, self-defeating. In the wake of rapid municipal expansion and its accompanying pressures for the furnishing of vital services, it will be of interest to see how far the courts will go in departing from established precedent in permitting municipalities to disregard their own zoning.

Since the responsibility for designing a building in accordance with existing ordinances rests on the architect, this again emphasizes the importance of placing the burden on the owner's attorney in doubtful cases when any question arises as to the propriety of the program contemplated for a particular site.



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Mechanical Engineering Critique *by William J. McGuinness*

P/A Office Practice *article devoted this month to Multipurpose Ceilings.*

In office and merchandising areas flexibility is very important, yet it must not interfere with the orderly distribution of mechanical services. For instance, in office spaces with continuous, exterior glass walls from floor to ceiling and few permanent interior partitions, the distribution of mechanical facilities must be made through ceilings, floors, and columns. Pipes for localized washing and drinking water can be furred into "wet" columns; floor conduits may be used for telephone and electric service; the ceiling inherits the balance of the required mechanical functions, together with facilities for their maintenance. These include:

1. Uniform lighting to effect high intensity at work level, minimum glare, and maximum eye comfort.

2. Access for relamping and cleaning of translucent diffusing surfaces.

3. Provisions for sound absorption, using surfaces that can be cleaned easily.

4. Provision for diffused delivery of conditioned air for heating, cooling, and humidity control.

5. Modular, linear divisions for the top-bracing of thin, ceiling-high partitions or to receive the tops of partition mullions that will brace dwarf or intermediate-height divisions.

6. Easy adaptation to a uniform and inconspicuous sprinkler pattern, when the occupancy dictates this kind of fire protection.

7. The combining of these elements into a visually attractive, esthetically pleasing, and flexible composition.

It is only recently that all of these design requirements have been jointly considered and the effort invested to produce usable results. One of the assemblies that solves all these problems is the Sigma ceiling of The Wakefield Company, manufacturers of lighting equipment.

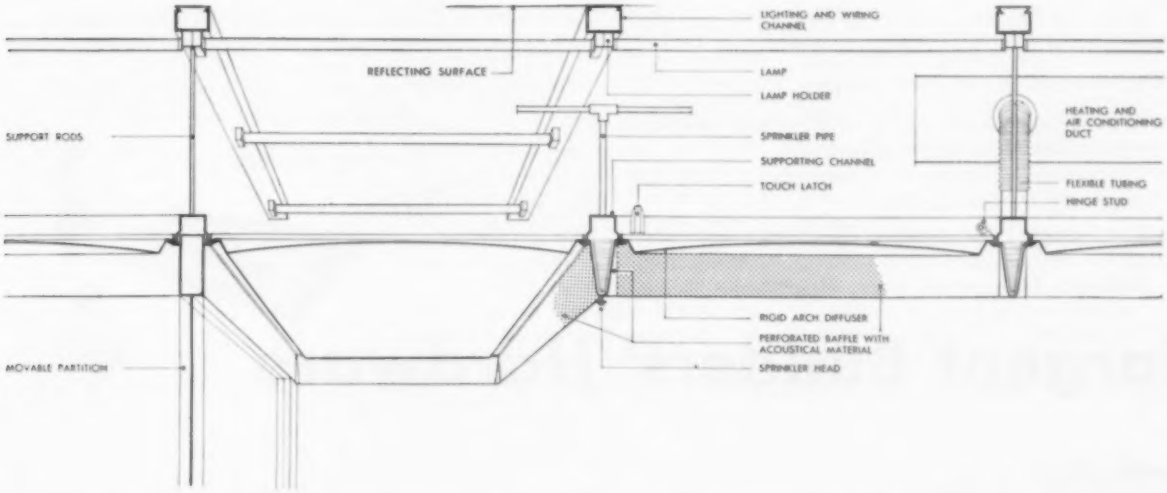
Installed and tested in Wakefield's new office building at Vermilion, Ohio, this new ceiling will soon be on the market. Lighting intensity of 100 ft-C is produced by continuous, slim-line fluorescent lamps on two-ft spacing. An 88 percent reflective surface above and cambered, square, plastic light diffusers below combine to achieve this with a comfortably low contrast-ratio of ceiling to work-level intensity. Actuated by a touch-latch, the aluminum-framed acrylic-plastic light diffusers swing down to permit cleaning, relamping, and service. Using the world's first complete installation of high-frequency, high-voltage lighting (400 volts, 840 cycles), the system shows many advantages. They include simpler wiring, fewer circuits, 15 percent greater efficiency, no flicker, and prospect of longer lamp-life. The wattage reduction lowered the air-conditioning load by 15 percent. The cost of the lighting installation is the same as that of conventional installations. Lamps start instantly and are controlled by switches on the mullions of movable partitions.

The acoustical baffles are of perforated steel with 25 percent open area and a glass-fiber core held ¼ in. away from the metal. This space makes the baffle more effective acoustically and creates an air passage which permits the perforations to double as air-conditioning supply registers. The coefficient of acoustical absorption is .90 for the material of the baffles and .50 for the composite ceiling.

Air-conditioning ducts above the plane of the lights serve the baffles by flexible conduits painted white and placed to avoid shadow. Tests at Case Institute of Technology have established reasonable static resistances for usable rates of air flow. The supply locations may be changed to accommodate office divisions or concentrations of heating or cooling demand.

The tapered baffles may be removed when ceiling-high office partitions are desired. Four- and five-ft module grid systems are available. Mullions fasten at the intersections of the module lines. At other intersections over occupied areas, very unobtrusive sprinkler heads may be installed.

Architects for the Wakefield Building were Outcalt, Guenther & Associates of Cleveland; Consulting Engineer was Paul C. Mehnert, also of Cleveland; and Illuminating Engineer was Robert D. Burnham of The Wakefield Company.



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Precautions in Dissolving a Partnership

P/A Office Practice ***article on the legal pitfalls of concluding a partnership, without incurring heavy penalties or responsibilities.***

The reasons for dissolving partnerships are multitudinous. Whenever a particular one of these may arise for the individual architect he can well proceed with caution. Partnerships are like marriages: mighty easy to get into—not so easy to dissolve.

The architect can of course pick up his belongings and just walk out the front door, but in so doing he opens himself wide to a long string of future difficulties, whether there are or are not assets to divide.

Here are important factors of agreement for the partners, as well as safeguards for each individual in any such action. They are compiled from advice of lawyers, bankers, and experts as well as from the practical experience of several architects of the writer's acquaintance.

First, there is the matter of liability. The law, in many court decisions, has set forth that in situations where one partner has broken his contract by withdrawal his copartners may recover damage from him for the breach, if the breach is unjustified. One cannot, ordinarily, just walk out of a partnership.

The partnership contract should be examined closely before any notice to step out of the arrangement is given or any action of this nature taken. It is always safest to have it checked by one's lawyer to make sure that one may withdraw from the partnership without penalties and to analyze in advance what those penalties will be, should the step be taken. Even where the partnership contract does not provide for such penalties, one partner who does breach the contract can possibly be liable for damages to the other partners.

It is far better to make certain of the existence of any such penalties or possibilities for a damage suit before the initial step has been taken. In every instance it is far better to come to a mutual agreement to dissolve such a partnership before doing so, and to have a contract drawn under guidance of one's lawyer, agreeing to such dissolution in order to preclude any possible change of mind at a later date by the remaining partner or partners.

Of course, a partnership may come to an end by operation of law as well as by the act of a partner. The death of a partner automatically works a dissolution. Although the surviving partners may continue the same business, at the same place, in the same manner, it is a new partnership relation. The sale of a partner's interest, whether forced or voluntary, has the same effect.

Another very important step is for the architect to issue a notice of dissolution of the partnership. Legally, when two or more architects enter into a partnership they give evidence to one and all that within the scope of the relationship each partner is an agent. Notice of dissolution is a necessary procedure not only to give the retiring partner protection against future liability as a member of the firm but also as protection for the remaining partners.

It is not required that any such notice be given to persons never made aware of the existence of the partnership. To protect themselves, the partners should give notice of such dissolution to persons who have been accustomed to deal with the partnership. Some courts have ruled that actual notice is necessary only to persons who have at some time during the continuance of the relation extended credit to it. Publication of a general notice of the dissolution will usually protect the partners.

•

The next step is one of accounting. Where the partnership contract has specified exactly what steps are to be taken in determining division of assets or liabilities, then these must be followed. It is legally safer to follow them to the letter than to take any steps by oral agreement.

When no such provisions have been set forth and where partners cannot amicably agree upon a settlement of the affairs of the partnership or distribution of assets, any partner may call upon a court of equity for its assistance. The court, after bringing all partnership assets under its control, will decree a sale of them and a division of the proceeds among those entitled to share in them.

The court also determines the order of distribution of assets once they have been determined. Claims of creditors, other than claims owing to members of the partnership, are to be paid first. (Even where the matter has not been placed in a court of equity this is the

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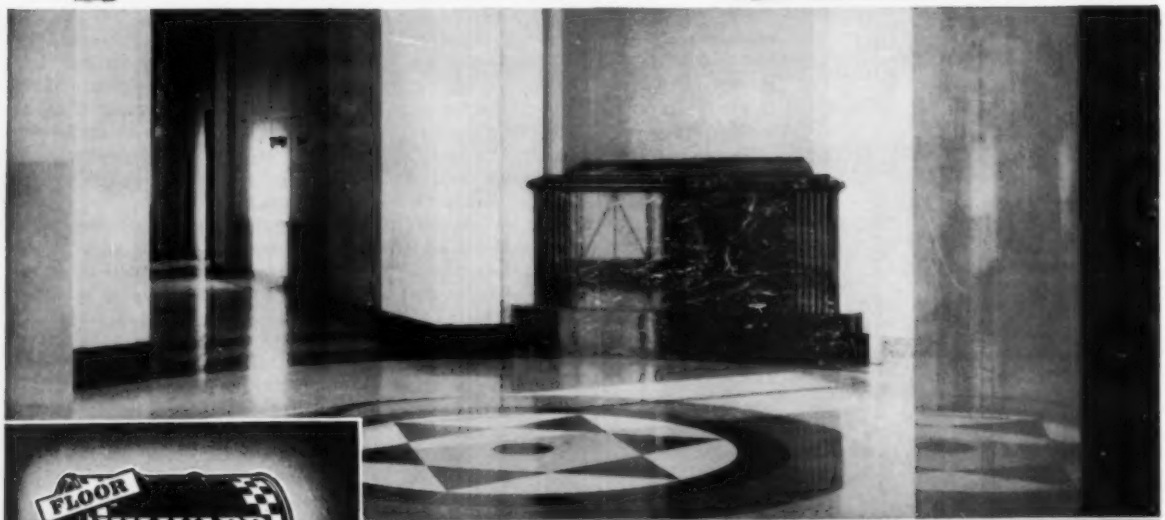

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Precautions in Dissolving a Partnership

best procedure to follow, rather than division of liabilities together with assets.) Until such claims have been paid, partners are not entitled to take anything from remaining assets.

When the matter is in equity, if the assets are insufficient to meet claims, the court will order the members of the partnership, in the ratio to which they are to bear the losses, to pay into court an amount sufficient to meet the debts owed by the partnership to other parties.

Under equity procedure, after such claims have been paid, the court will, if the balance is sufficient, return to each partner any advance which he has made to the partnership over and above the amount he agreed to contribute as capital. If the balance is insufficient to meet such advances the partners will be charged with this as a loss in the ratio in which they are to bear losses.

Determining what we plan to do after partnership dissolution should also receive consideration before the actual steps are taken. If the partnership agreement has specified restrictions on our actions as to where we may set up practice on our own, or within what specified period of time, these will ordinarily have to be followed. In almost every instance, courts have upheld such clauses of partnership contracts and awarded damages; exceptions were usually those involving individual and unusual circumstances. It's safest to take the point to one's lawyer and have him prepare advice on what steps are to be taken.

Where there have been no provisions of this sort in a partnership contract we can, of course, do anything we please so long as our actions are not of such a nature as to expose us to possible damage suits.

•

Tax matters should be given the very closest attention in any partnership dissolution. Safest rule, by far, is to place tax liability accounting of the individual partners in the hands of a lawyer or of a qualified tax expert. In most cases, the matter may be taken directly to the various tax bodies and liability determined. Where agreement can be obtained as to liability and the matter settled then and there, it is, of course, the best step to follow. Another method is to secure such agreement between the partners and place such funds as are determined upon in trust for payment at the proper time. This should be accompanied by specific agreement as to liability for taxes in the remaining period of the year by the remaining partners. Such an agreement will protect one only in providing a basis for a damage suit should that be needed; usually tax bodies hold the retiring partner liable regardless of what steps have been taken for mutual dissolution of the partnership.

The 1954 tax law provides special rules for the treatment of payments made to a retiring partner or to his estate or other successor in the partnership. It specifies that capital-gain treatment will be available only to the extent that the payments are for an interest in the partnership or property.

The treatment of payments which are not made for an interest in the partnership depends upon whether these are determined by reference to the income of the partnership. If they are so determined, they are treated as a distributive share to the recipient; if not, they are treated as "guaranteed payments."

If the payments consist of a percentage of partnership income, they are excludable from the gross income of the remaining partners. If they are not so determined, the effect is the same, because they are deductible as business expenses in determining partnership taxable income. In either case, the payments will be treated as ordinary income, and not as capital gain, in the hands of the recipient partner.

The manner of partnership dissolution and the "air" under which it is conducted can often determine whether the action will be successful. No matter how belligerent we may feel, we stand to gain the most by holding back our emotions while such matters are being decided. Where belligerency exists on the part of both sides in such matters, a great many difficulties can arise and make the dissolution a painful procedure.

Best program for a partnership dissolution under such circumstances is to reach agreement that all details will be handled by a third party, preferably a lawyer whose decisions will be accepted by both sides. In this way, both partners will be assured of an impartial view on all matters concerned with the dissolution, and there will be less opportunity for additional disagreement.

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"Structures in Membrane on Co-Acting Ribs"

Dear Editor: Paul Chelazzi's article on membrane-rib structures (page 91) is a contribution to progressive architecture. A primary reason is the correctness of his approach. Architecture deals in mass, form, and color with these properly expressed in a plan and design which is useful and economical, with the further necessity that the whole is "mechanically efficient" and "constructionally healthy." Chelazzi presents thinking along these lines and I find his article to be:

Stimulating and practical. It provides for flights of the imagination, yet in greater degree it sets forth a basis for practical application of some hitherto less understood adaptations of natural forces. This stimulating approach, and more study of it, should arouse the progressive architect toward gaining fuller freedom of expression through legitimate structural media.

In step with the technics of our present time. Architecture records the history of previous great civilizations and tells us much about man and his living during those times. Good architecture must always keep step with contemporary civilization and express itself in the best possible form permitted by its technics. The Renaissance architects had difficulty in fully expressing their capabilities of design because of a lack in certain cases of suitable materials which would allow this expression. The technics produced by advancing civilization since the Renaissance have given us steel and lighter materials of greater strength and architecture in varying degree has reflected these. Lately has come further developments in material such as glass, with its larger expanse, its greater structural strength, and its characteristics for better living. Another material, reinforced concrete, has developed in recent times, but to my mind it still lacks a development that reaches its greater capabilities. A still further development in another form is that of steel cables or "steel-wire purlins" which while used successfully on bridges, have had less application to architectural building structures. In this article we are presented a refreshing thesis on the greater possibilities of both materials. Chelazzi has courageously pursued his goals in this respect and he is to be urged to continue and further his studies. My discussions with the author and this article lead me to the hope that other members of my profession will join in such studies.

Suggestive of ingenious architectural solutions. While fanciful at times, the article provokes sound thinking and goes further than "philosophy" by providing solid engineering data as to how results can be obtained from an engineering standpoint. For instance, the treatment of a cloister walk with the haunched-curved ribbed structure, shown in Figure 17, may seem an over-extension of customary methods of providing pedestrian shelter. Yet it highlights a pattern and stimulates thought as to how with less structural extravagances it might solve problems for more useful structures under certain circumstances. This and other examples by Chelazzi of either an asymmetrical plan or an equilateral as shown in Figures 15 and 16 give further ideas toward logical and interesting solutions of problems, even applied to such down-to-earth projects as modern parking garages. Other solutions are possible by employing a continuously curved polygonal rib for a long-span arch or a cantilever span. His groin-ribbed membrane-roof structure shown as a cover for market place is certainly provocative of thinking that may reach, with further study, a fulfillment meeting the challenge

(Continued on page 14)

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ABP

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(Continued from page 13)

which forward-looking architects feel exists.

A practical exposition in its overall aspects. In addition to setting forth engineering data, and forms which they may take for practical construction, it weds within a design, the use of different materials into a practical union. An example is the use of reinforced-concrete struts and purlins of steel wire for supporting load along the span "regardless of the difference in the moduli of elasticity of these materials." Yet more than this, he has been practical by not forgetting that greatest of all factors in modern architecture, economy. I quote, "hence a structure designed with concrete struts and steel cable wire purlins may prove cheaper than an all steel job."

PROGRESSIVE ARCHITECTURE is to be commended for the publication of this article, and naturally, Paul Chelazzi, for writing it. It certainly, in my opinion, is worthwhile to encourage Chelazzi's efforts, both for their relevancy and also their usefulness toward what could prove better and more economical buildings.

CHESTER L. CHURCHILL
Boston, Mass.

•

Dear Editor: Paul Chelazzi's article is a splendid contribution to the Architectural and Engineering professions. He focuses our attention on the advantages and efficiency of axially stressed members and gives us some examples of arrangements of structural members which can make the best use of this principle.

He is to be congratulated for his success in accomplishing his stated objective of analyzing the problem so that it will be clear even to the layman. Furthermore, his analysis of the various structures seems to the writer to be complete and adequate with respect to the unchanging dead load of the structure. In most of the cases involving building structures such as he is discussing, it is quite likely that live loads, and perhaps even wind loads, will be small with respect to dead load and thus require no special treatment. However, in some cases there will be unsymmetrical live loads and wind loads of relatively large proportions. In such cases the ideal structures

(Continued on page 16)

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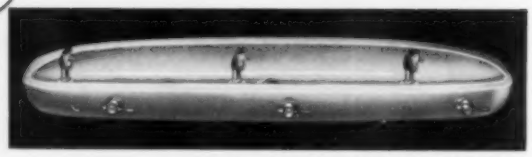

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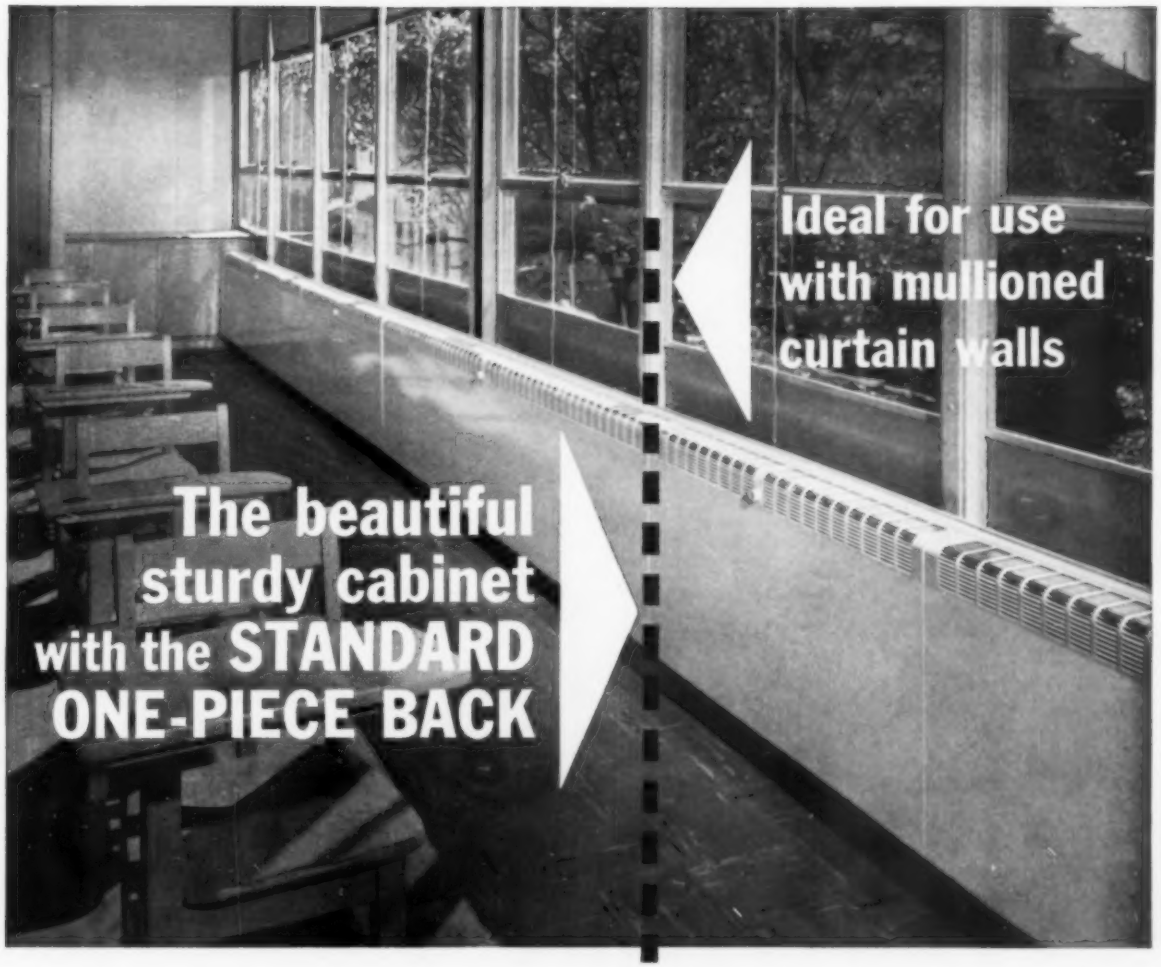

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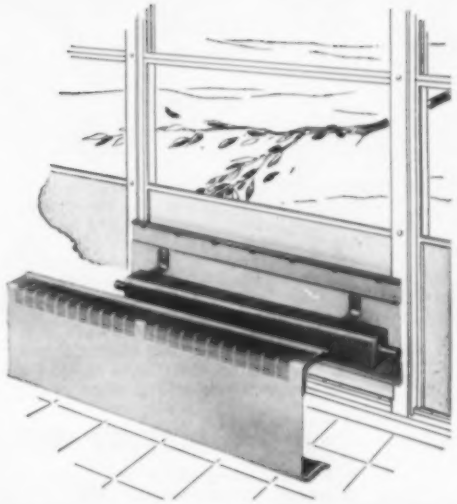

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(Continued from page 14)

suggested by Chelazzi would probably require some slight modification. The author has touched on this subject in his closing paragraph, but it seems to the writer that a few additional independent comments might be of interest as a means of rounding out the discussion.

For instance, although the structure indicated in Figure 11 would be perfectly sound at dead load, it would probably be subject to undue distortions under even uniform live load. This does not mean that the idea is not fundamentally good — it simply means that additional restraining members, such as vertical or diagonal ties, should be installed between the main carrying members, so that the structure will act as a "suspenarch" under dead load, but as a tied arch or a truss under live and wind load. The same sort of thinking should also be applied to the polygonal rib and membrane structure illustrated in Figure 13. In this case the structure as shown would be adequate for uniform live load, but for unsymmetrical live load or wind load it might be necessary to add some provisions such as vertical ties to the ground at the outer ends of the ribs and a peripheral tie-cable connecting the outer ends of the ribs.

At several points in the article the author has stated that in conventional trusses it is necessary that both chords be of like materials so that they will have equal deformations. The writer would qualify this to the extent of saying that such an arrangement, although often desirable, is not an inherent necessity. Unlike materials can be used. It is true that their use would be likely to produce greater deflections of the whole structure and larger secondary stresses in the individual members, and provision must be made to insure that such deflections and stresses are within the allowable.

For readers of a mathematical turn of mind, the following academic comments may be of interest: In his discussion of Figure 12, the author reviews the mathematics of a parabolic cable. Some readers might quarrel with the use of this type of curve and their complaint would be justified from an academic point of view. The parabola is the curve form assumed by a weightless string when loaded with a uniform load per unit length of the horizontal span of the string. In this case, however, the string is loaded with a uniform load per unit length of string. This type of loading produces the catenary curve form. However, for shallow sags there is no pertinent difference between the catenary and the parabola. For this reason the author is entirely justified in using the simpler parabolic equations.

BLAIR BIRDSALL
Chief Engineer, Bridge Division
John A. Roebling's Sons Corporation
Trenton, N. J.

(Continued on page 22)

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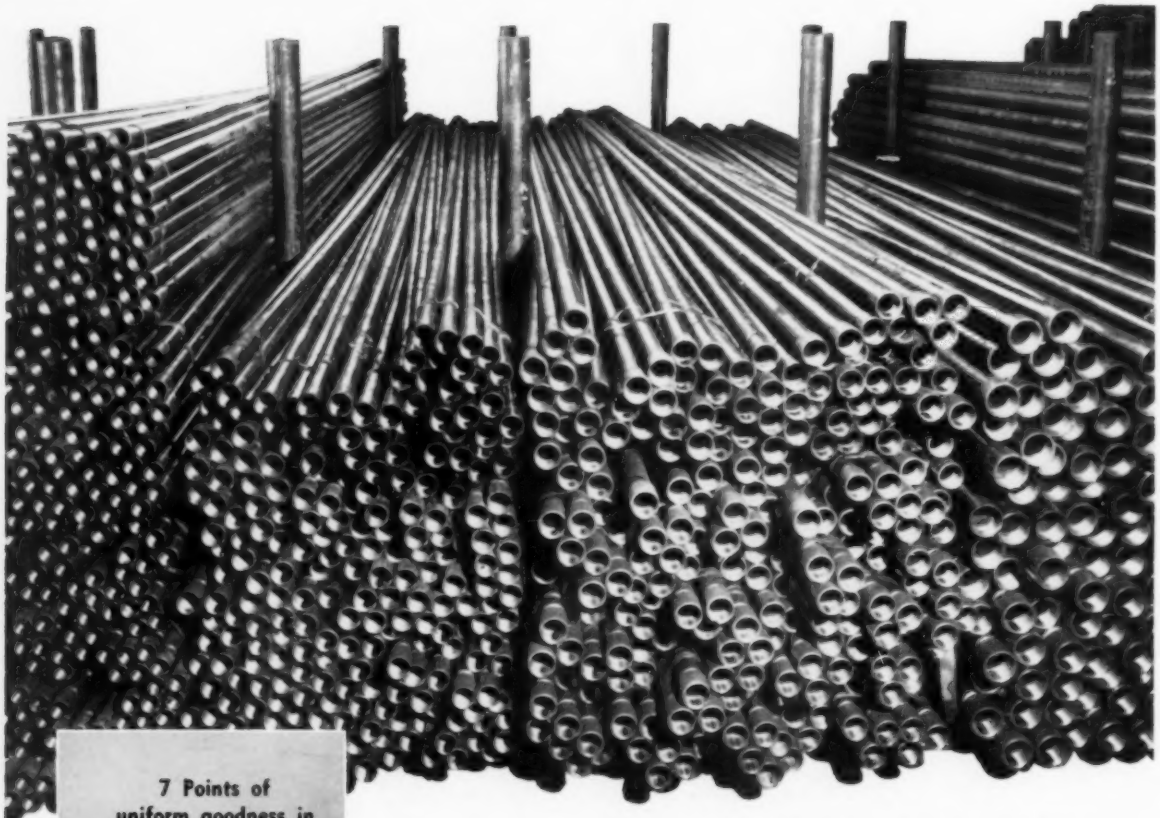

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F S T C

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GAUGES OF RESILIENT FLOORING

The most obvious reason for concern with the gauge or thickness of a resilient floor is its effect on the length of service it will give. Once this was the most important factor in the selection of flooring. Until recently, the gauges manufactured in the United States closely followed the example of those made in Europe. There, construction was expected to last for centuries and demanded the thickest gauges that could be produced, with little or no heed to the cost of such materials. "Battleship" linoleum, for instance, meant 3/16" or thicker and was actually made in both 1/4" gauge (0.250") and occasionally 8mm. gauge (0.315") to special order.

Today, long experience in the resilient flooring industry has resulted in superior manufacturing methods and improved materials. These impart far greater durability—and economy—to traditionally favorite floors, so that gauges which were once regarded as being too "light" for satisfactory performance now appear more than adequate for most residential and commercial areas. In addition, new resilient floors have been introduced, with superior compositions and newly developed synthetic binders. These, in thinner gauges, provide durability equal to or better than that supplied by thicker gauges of more traditional materials.

Along with these product improvements, the modern trend toward frequent redecoration, which often necessitates the replacement of a floor long before it has worn out, has made durability a somewhat less important consideration in the selection of a floor than it has been in the past. There are, however, other properties of resilient flooring that are affected by its gauge . . . notably appearance and comfort. The thicker the gauge, the better the resilient floor hides subfloor irregularities, and the better the appearance. The floor's comfort value and quietness also increase with the gauge.

In any resilient flooring installation, of course, it is necessary to take into consideration a number of factors other than the gauge or thickness of the material. In choosing a flooring material, the proper **composition** for the type of service it will undergo must be decided **first.** Then the gauge of that material is considered.

Homogeneous Resilient Tiles

In the case of homogeneous, unbacked tile floors, gauges exceeding 1/8" are seldom used except in commercial installations where maintenance and traffic conditions are extremely severe. From the point of view of durability, the thinner gauges of the chosen composition will meet most requirements where the amount of maintenance is expected to be reasonable. But if quietness and comfort are of major importance, thicker gauges should be chosen. For locations where poor maintenance or severe traffic conditions are involved, the thickest available gauge in the correct flooring material should be chosen.

There are some compositions of tile such as Linotile in which only one "all-purpose" gauge is available. Here it is safe to assume that the nature of the tile makes it applicable to a broad range of conditions in the type of service for which it was designed.

Linoleum and Sheet Plastic Floors

Backings were originally used on resilient floors merely as a carrier to support the flooring materials during processing. Now they make important contributions to the flooring by adding even greater resilience and comfort. Recent developments include special felts such as Armstrong Armofelt®. This backing material, saturated with resins, gives very superior performance. As a result of the variety of backings used, and their effects on the qualities of a floor, the gauge of "backed" resilient flooring materials cannot be considered without reference to backing as well as the surface composition.

In choosing linoleum, Light and Standard gauges should be used only in areas of light service or where initial cost dominates considerations of durability. Heavy gauge linoleum should be used for most commercial installations, since such floors are subjected to concentrated traffic.

The durability of the new plastic compositions permits plastic flooring materials to be manufactured in thinner gauges with serviceability equal to that of linoleum in heavier gauges. For example, the thinner gauges of Armstrong Corlon plastic flooring can be regarded as equal to Standard gauge linoleum.

Installation guide—resilient floors by type and gauge

Flooring materials suitable for severe service conditions also can be used in lighter service areas. These recommendations, however, take into account the cost factor and eliminate heavier gauges where a thinner gauge represents a more economical value.

HOMOGENEOUS FLOORS
Made without backing. Wearing surface extends full thickness of tile.

WEARING THICKNESS			Severe Commercial	Commercial	Light Commercial	Residential	Light Residential
CUSTOM CORLON TILE (Vinyl)		1/8"					
		3/32"					
EXCELON TILE (Vinyl-asbestos)	Service Gauge	1/8"					
		1/16"					
CORK TILE		5/16"					
		3/16"					
		1/8"					
CUSTOM CORK TILE		3/16"					
LINOTILE		1/8"					
RUBBER TILE		3/16"					
		1/8"					
ASPHALT TILE *Standard*		3/16"					
		1/8"					
ASPHALT TILE *Conductive*	Not for use in hospital operating rooms.	3/16"	Heavy industrial for static control				
		1/8"	Industrial for static control				

BURLAP-BACKED FLOORS
Over-all gauge—1/8-inch.
Wearing thickness—.090-inch.
Backing—.035-inch.

WEARING THICKNESS / BACKING		Severe Commercial	Commercial	Light Commercial	Residential	Light Residential
HEAVY GAUGE LINOLEUM	Plain (Including "Battleship")					
	Jaspé					
	Marbelle					
	Textelle					

FELT-BACKED FLOORS
Over-all gauge—.090-inch.
Wearing thickness—.050-inch.
Backing—.040-inch.

WEARING THICKNESS / BACKING		Severe Commercial	Commercial	Light Commercial	Residential	Light Residential
STANDARD GAUGE LINOLEUM	Plain					
	Jaspe					
	Marbelle					
	Raybelle (Incl. Tile)					
	Rayelle (Incl. Tile)					
	Spatter					
	Embossed Inlaid					
	Craftline Inlaid					
	Town House Inlaid					
	Straight Line Inlaid					

FELT-BACKED FLOORS
Over-all gauge—.070-inch.
Wearing thickness—.030-inch.
Backing—.040-inch.

WEARING THICKNESS / BACKING		Severe Commercial	Commercial	Light Commercial	Residential	Light Residential
CORLON (Sheet vinyl)	Granette					
	Decoresq					
	Terrazzo					
LIGHT GAUGE LINOLEUM	Marbelle					
	Decoray (Incl. Tile)					
	Newray					

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p/a views

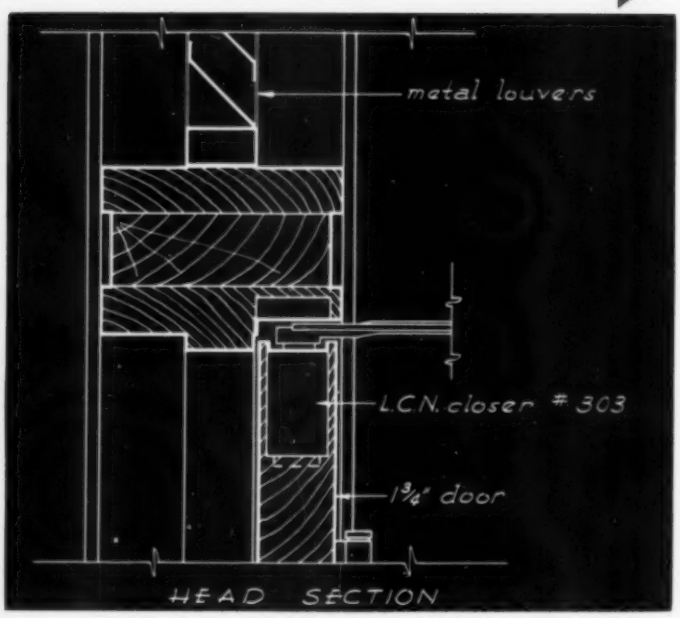
(Continued from page 16)

Dear Editor: Though I am not competent enough in engineering to discuss analytically Paul Chelazzi's article, I should like to expalin why a similar article by the same author was published last year in the new magazine, *L'architettura-cronache e storia*, which I edit. Chelazzi is not only a creative engineer who solves, in a most unusual way, technical building problems; he is also a stimulus to architectural invention. His structures cannot be defined simply in terms of engineering: they are hypotheses for new architectural forms. It is in this, I believe, that his importance lies, in a multiplication of hypotheses which then may become practical and workable through the agency of an artists's imagination.

It is well known that we have many creative engineers in Italy. Pier Luigi Nervi is the most famous, internationally. However, his masterpiece, the Orbetello hangars, was conceived and built without the collaboration of any architect. In this sense, Nervi belongs to an old and glorious engineering tradition which begins in the middle of the 18th Century and includes Paxton, Eiffel, Freyssinet, Maillart. These structural geniuses form a great chapter in the history of modern architecture, but a chapter which professionally remains apart from the context of spatial and plastic values, even though in some instances it has stimulated them. When these engineers worked with architects or met problems that went beyond the structural, their imaginations seem to have been frustrated. Their contributions were not integrated within the whole realm of architecture, as would have been the case in preceding periods, from the Egyptian to Gothic and Baroque times. Brunelleschi and Guarini were architects and engineers at the same time. Vanvitelli was probably the last architect - engineer. Subsequently, we have a separation between great architects and great engineers.

Our problem today is to eliminate this two-century-old dichotomy and find a new integration. If it is true that modern technical progress prevents the same person from being both a great architect and a great engineer, then teamwork is necessary. But teamwork should be intimate interchange, not mere juxtaposition of competences. Spatial, plastic, and structural problems cannot continue to be solved separately, with a final "compromise" as the result. Engineering should be open-minded, should offer hypotheses and not solutions, because architecture cannot accept ready-made solutions that must be twisted to meet spatial and plastic problems. Chelazzi's structural hypotheses are not completely defined; they raise questions, doubts; they stimulate counter-proposals. This is why they are so interesting in a culture such as ours, which is striving to reconquer an integrated vision of architecture.

BRUNO ZEVI
Rome, Italy



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Harold Spitznagel & Associates, Architects

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Owner: **The Winston Park Corporation, Oak Park, Illinois**
Architects: **Erwin Gerber and A. Pancani, Newark, New Jersey**
Engineer: **Edwin Hancock, Chicago, Illinois**

Consulting Engineers: **Erwin Gerber and A. Pancani, Newark, N. J.**
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Obviously, many factors influenced such a demand for these homes in the Winston Park project at Melrose Park, Illinois. Not the least is the fact that they are equipped with baseboard forced hot water systems using B&G *Hydro-Flo* equipment. The appeal of *controlled radiant heating*, plus a year 'round supply of domestic hot water, are plus selling values builders are rapidly discovering.

The major problem of the large scale builder is to create homes with features which raise them out of the commonplace. The versatility of water as both a heating and cooling medium—its ability to provide the ultimate in comfort and convenience at low operating cost—its flexibility, offer the builder a new selling lift.

All the advantages of a B&G *Hydro-Flo* System can be included when building…or the owner can add them to the basic heating system as his budget permits. Summer cooling—zoning—snow melting, are all available at the owner's convenience for further contribution to luxurious living. In the meantime, he enjoys the best in heating…comfort with economy.

ONLY WATER OFFERS *ALL FIVE*

COMFORT HEATING

SUMMER COOLING

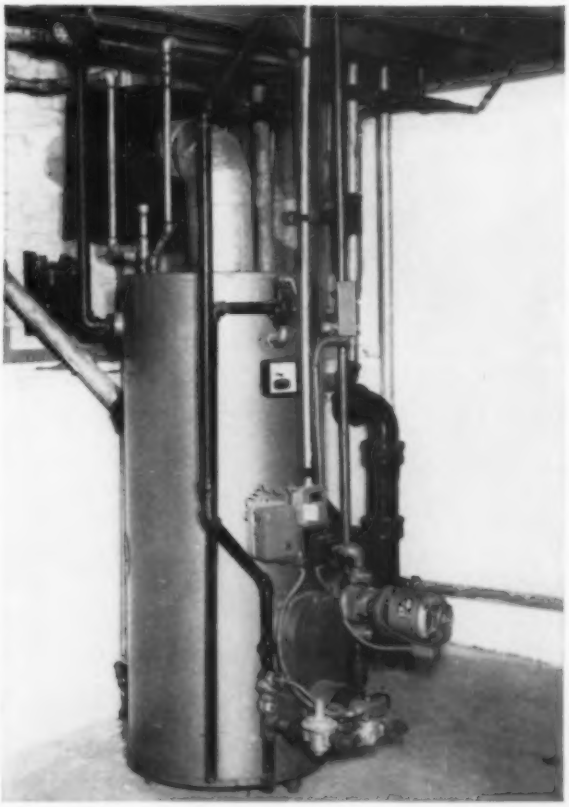
SNOW MELTING

HOT FAUCET WATER

heated homes sold over one week-end

THE B&G BOOSTER

Engineered for compactness, silent operation and years of service, this electric pump circulates water for heating the house in winter, cooling it in summer and for snow melting panels. The B&G Booster has a solid reputation for dependability ...that's why over 2,000,000 have been sold to date!



The heating plant, equipped with B&G Hydro-Flo Products, as installed in Winston Park Homes. Note the compact space saving arrangement. The boiler has a built-in domestic water heater.

ZONING

BELL & GOSSETT
COMPANY
Dept. EK37, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, W. Toronto, Canada

*Reg. U. S. Pat. Off.

Another

Area of Condensation

banished forever!

THESE UNIQUE ROOFING PANELS DRY THEMSELVES BY WEATHER AIR VENTILATION

In the last large area of condensation — in and under the roofing — vapor barriers have failed to give anything but a partial answer. Wilson Air-cor Roof Decking now gives the final, complete answer with a scientific method of removing moisture from the decking itself — *by weather air ventilation.*

Architects and builders are no longer limited — by local conditions of climate — in their selection of the finished roofing material. For any type of structure and any pitch of roof, Wilson Air-cor provides the dependable roof decking.

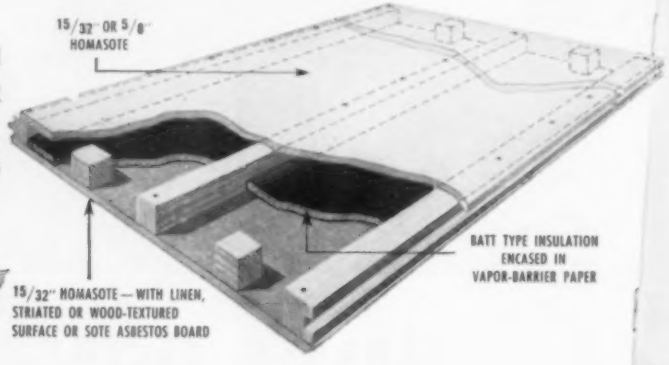
126 days of testing by the Engineering Research Department of a leading State University demonstrated "the feasibility of actually drying a wet roof of the Air-cor type by weather air ventilation." The published report recognizes the impracticality of a perfect vapor barrier. With Wilson Air-cor, there is no need for a perfect barrier. The revolutionary principle of ventilation embodied in Wilson Air-cor Roof Decking overcomes the severest conditions of humidity and temperature. Extensive research and actual use prove that Wilson Air-cor makes condensation a problem of the past.

The description of this remarkable product in the Homasote Handbook begins: "The panel consists of 2 x 2 wood members 12" o.c. nailed and glued between two pieces of $^{15}/_{32}$" Homasote. On the lower inside of the Wilson Air-cor Panel there is $^{3}/_{4}$" of batt type insulation, with a vapor barrier on the bottom side, and a ventilated paper on the top side. At each end there are two small wood blocks to support the Homasote. With only these two small blocks, there is a width of 16" at each end for air to flow from panel to panel." Air enters at the roof edges—where a rake mold is nailed on $^{3}/_{4}$" blocks over screen wire—and insect-free air circulates the length of the roofing.

The Handbook continues with specifications, test data, and building instructions. For example, you may be surprised to learn that the problem of ridge and filler has been taken care of with the Wilson Air-cor Ridge Panel. You will be happy to find that Wilson Air-cor is actually a finished ceiling—with three beautiful under-surfaces to choose from (or even Sote Asbestos Board). Accurate tables and complete diagrams give the *right* information, from width of ridge required for any number of courses, even to pre-drilled nail holes — just one more example of the **know-how** of the Homasote Handbook.

The new 68-page Homasote Handbook has the right answers to 99 other building problems—answers backed by 46 years' experience in the making of quality materials. We are proud of this book, and have confidence in its basic value to every architect, builder, and dealer. May we send you a copy? Kindly address Department **G-8**.

WILSON AIR-COR ROOFING PANELS


15/32" OR 5/8" HOMASOTE
BATT TYPE INSULATION ENCASED IN VAPOR-BARRIER PAPER
15/32" HOMASOTE — WITH LINEN, STRIATED OR WOOD-TEXTURED SURFACE OR SOTE ASBESTOS BOARD

OPERATION '56 the year to FIX HOME IMPROVEMENT

HOMASOTE COMPANY
TRENTON 3, NEW JERSEY

Rolling Steel Doors

for Craneway Openings and Dividing Walls in School Gymnasiums

Rolling Steel Doors have proved over many years to be the most practical means of closing overhead craneway openings. This is true regardless of whether the closure be an exterior opening, for an extension of the craneway outside of the building, or a dividing wall inside the building as shown below. In this installation, three separate Mahon power operated rolling steel doors are employed with two swing-up mullions between, and two swing-up closure plates at each end over the crane track-beams—all are power operated and push-button controlled.

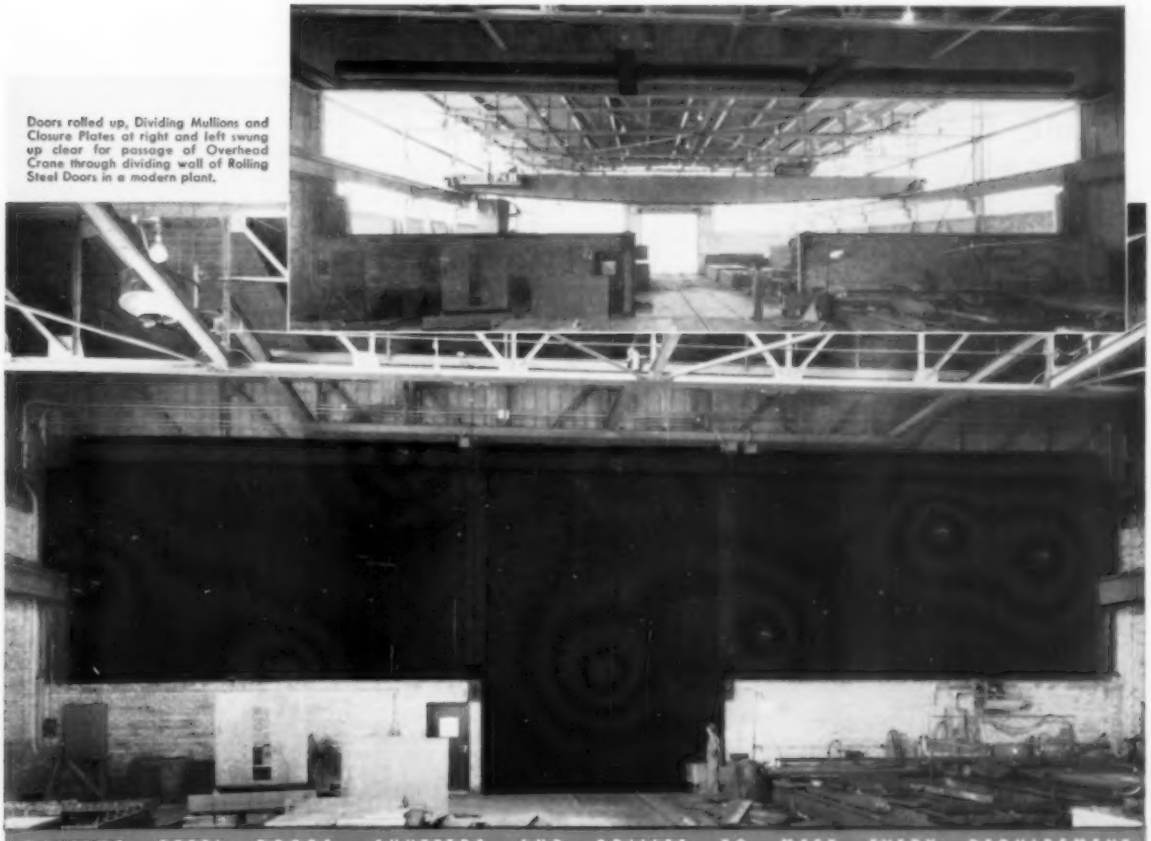
The full length door in the center is a railroad opening—the track enters the building through another Mahon power operated rolling steel door at the far end of the building. This center door can be opened independent of the other two for passage of railroad cars. The two rolling steel doors on either side, above the curb wall, are opened only for passage of the overhead crane.

Similar installations have proved most practical in school gymnasiums where it is desirable to divide the gym floor for certain activities. In these installations, aluminum or stainless steel doors are employed with sliding mullions which are moved to either side clear of the gym floor when the dividing wall is rolled up. The operation is accomplished electrically in a matter of minutes.

Mahon experience in this type of installation is extensive. Mahon engineers will cooperate fully in working out details of rolling steel doors for craneway closures or quick-acting, roll-up dividing walls to meet virtually any requirement.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

Doors rolled up, Dividing Mullions and Closure Plates at right and left swung up clear for passage of Overhead Crane through dividing wall of Rolling Steel Doors in a modern plant.



ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Three Mahon Power Operated Rolling Steel Doors form Dividing Wall which permits passage of a 15-ton Overhead Crane in an 80-foot Craneway in the Verson Allsteel Press Company's new plant, Chicago, Illinois.

MAHON

EVERYBODY LIKES THESE SAFE, SANITARY GROUP WASH FIXTURES

Our experienced washroom consultants can help you.

ONE BRADLEY SERVES 8 TO 10

Women appreciate sanitary washing facilities, too.

Bradleys have been in wide usage for over 30 years.

Bradley Washfountains save space and reduce the number of piping connections by over 80%. Everybody likes them because of the extremely sanitary and roomy washing facilities they provide—no faucets to bother with, and no water waste since with foot-control, supply is turned "on" and "off" by means of the handy foot-rail.

Hands and arms are easily and quickly washed, while the self-flushing bowl prevents collection of used water. Janitor work and maintenance are cut to a minimum.

It will pay you to re-examine your washroom facilities—are they adequate for both men and women employees? To help you, our new colorful Catalog 5601 gives complete data and specifications . . . A copy is yours for the asking.

BRADLEY WASHFOUNTAIN CO.
2277 W. Michigan St., Milwaukee 1, Wis.

THE STANDARD FOR OVER 30 YEARS

Write today for Catalog 5601.

BRADLEY *washfountains*

Distributed Through Plumbing Wholesalers

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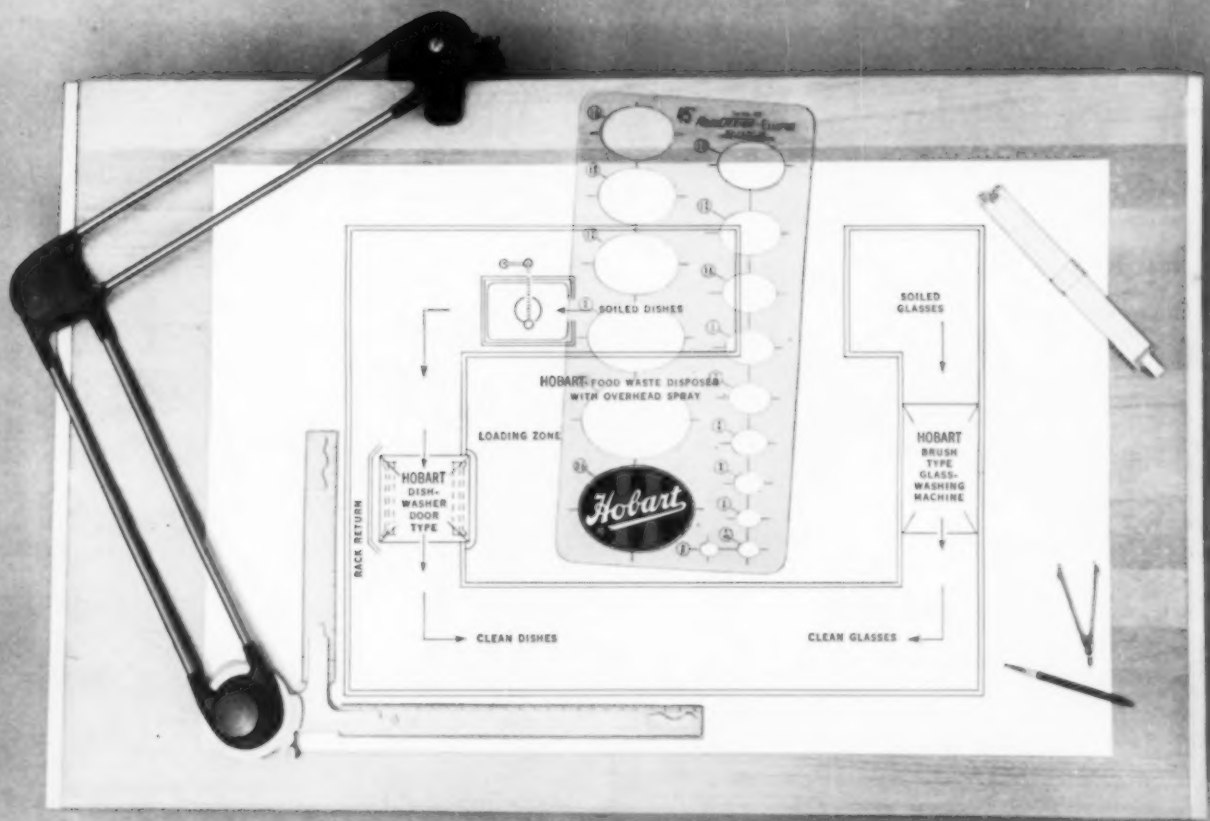
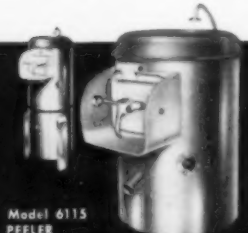


Basic—to every good kitchen design!

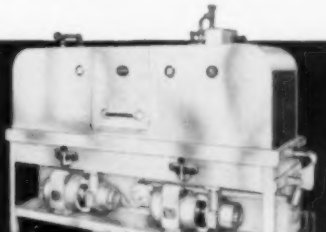
Hobart equipment and well-planned layout—these are your two basic ingredients for the best in kitchen operation.

Architects and kitchen designers find Hobart best to work with because of the unrivaled broadness of the line and the convenience of local Hobart representation. With the most machines in the greatest range of sizes and capacities, it's easy to meet the projected kitchen capacity while dealing with only one source.

And when this source is Hobart, with the greatest name for quality products, guarantee, and service in the industry—your choice of Hobart means satisfaction to your client for many years to come. Ask for catalogs, brochures, specification sheets ..... ***The Hobart Manufacturing Company, Troy, Ohio.***



Model 6115 PEELER available with cabinet base and trap accessory



Model XXM-4 DISHWASHER

Model H-600 MIXER

THE COMPLETE HOBART LINE

Dishwashers • Glasswashers
Dish Scrappers • Disposers
Meat Choppers • Meat Saws
Food Cutters • Tenderizers
Food Slicers • Coffee Mills
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Hobart machines

Trademark of Quality for over 55 years

The World's Largest Manufacturer of Food, Kitchen and Dishwashing Machines

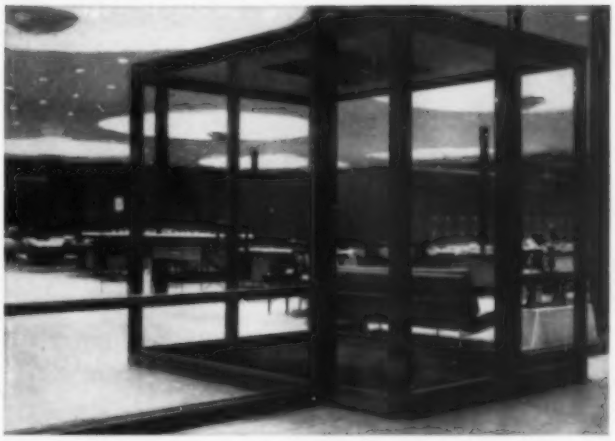
ARCHITECTS EERO SAARINEN & ASSOCIATES of Bloomfield Hills, Michigan, have achieved impressive originality in designing the Irwin Union Bank and Trust Company building in Columbus, Indiana. Adding importantly to the beauty, advanced architectural planning, and practical advantages of this structure is Pittsburgh's Twindow®. These window units, with insulation *built in*—were utilized for all exterior glazing.

Unique Bank Building in Columbus, Indiana,

makes telling use of

PITTSBURGH GLASS

SHOWN HERE ARE the drive-up tellers' windows, glazed with Pittsburgh's Multiplate®. This laminated heavy plate glass is bullet-resisting—a feature which makes it ideal for applications of this kind.



THE ENTRANCE to the bank building is highlighted by the full use of Pittsburgh Glass. The floor-to-ceiling glass panels give this outstanding structure an open, airy atmosphere which is appreciated by the depositors and bank personnel alike.

Design it better with

PITTSBURGH GLASS

Your Sweet's Architectural File contains detailed information on all Pittsburgh Plate Glass Company products . . . Section: 7a, 13e, 16a, 16d, 21.

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PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

A steel access door for less than the cost of wood!

Milcor Steel Access Doors need no special framing, cutting, or fitting

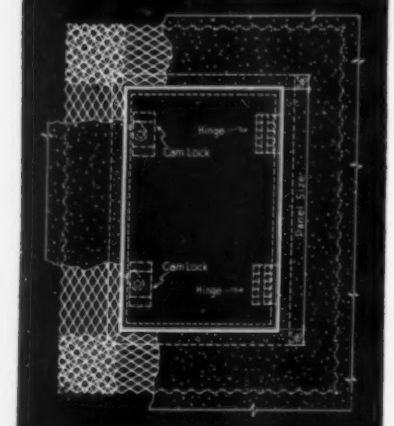
You help save labor costs and building time, when you specify Milcor Steel Access Doors — to provide quick, convenient servicing of plumbing, heating, electrical, and refrigeration systems in homes and public and commercial buildings.

Milcor Steel Access Doors are delivered to the job complete with framing. They're ready to install at once in either plaster or non-plaster construction, flush with the wall or ceiling surface. No old-fashioned frame protrudes to mar the appearance of your interior.

Paint or wallpaper can be applied right over Milcor Steel Access Doors. All doors are factory-primed and one finish coat usually covers. No sanding or filler coats are needed.

Three types are available for use with plastered or unplastered surfaces. Sizes — 8″ x 8″ to 24″ x 36″. See Sweet's File or write for latest literature.

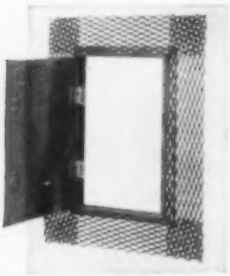
MILCOR® Steel Access Doors



Expansion wings protect against plaster cracks

Style "L" Access Door for plastered walls. Without expansion wings.

Exclusive spring hinge lets door open 175°. Door is removed quickly by extracting hinge-pin.



Style "K" Access Door for plastered walls. With expansion wings.

Style "M" Access Door for masonry, brick, stone, tile, wallboard, etc.

INLAND

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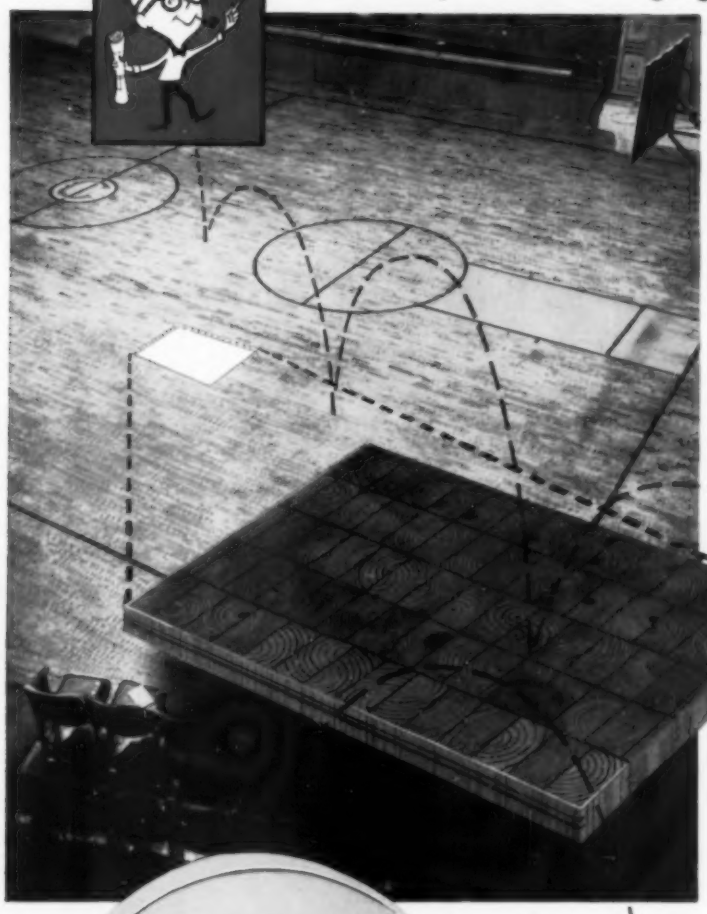
M-175

Take a tip from the guy who knows:



Canisius High School
Arch.—Albert A. Rumschik
Buffalo, New York

FOR NATURAL BEAUTY AND RUGGED DURABILITY... INSIST ON *Kreolite!*

If you're looking for a school flooring material that offers both beauty *and* durability, then *insist* on Kreolite Flexible Strip End Grain Wood Block Flooring!

No flooring material made can match the beauty of Kreolite's natural finish woods and the rugged durability of its famous end grain construction.

Ideal for school gymnasiums and vocational shops, Kreolite is economical to install, resilient underfoot. And you'll find that Kreolite Flooring is a cinch to maintain!

Discover for yourself why so many architects, school boards and school executives *insist on Kreolite*. Fill out the coupon below *today!*

The Jennison-Wright Corp.

2463 Broadway
Toledo 9, Ohio

KREOLITE FLEXIBLE STRIP END GRAIN WOOD BLOCK FLOORS

See our catalog in Sweet's or write for copy

Please send me a free sample and complete specifications of Kreolite Flexible Strip End Grain Wood Block Flooring.

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P

Now—for maximum Roof Protection Johns-Manville

Aquadam

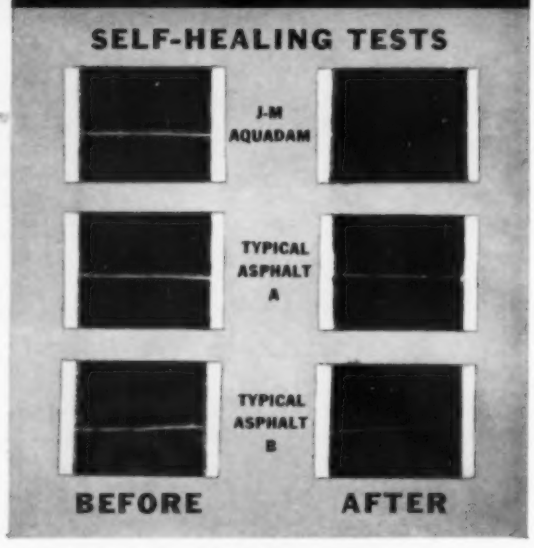
(slag or smooth surfaced)

Built-Up Roofs*

Aquadam offers these important advantages:

- Improved self-healing properties
- Superior weather resistance
- Superior resistance to cracking
- Greater kettle stability
- Exceptional adhesion—stronger bond
- Better resistance to water
- Excellent uniformity

Test shows Aquadam's amazing self-healing properties!



After exposure to normal summer roof temperatures, Aquadam (top) has completely resealed and repaired itself. Asphalt A (middle) and B (bottom) show little or no self-healing properties.

J-M Aquadam proved superior by actual test... helps provide longer roof life at no extra cost

J-M Aquadam Built-Up Roofs owe their proven superiority to the newly developed bituminous cementing agent Aquadam—which is used in the application of the roofing felts.

When applied, the excellent adhesive properties of Aquadam provide a permanent bond to the felts, and to gravel or slag surfacing. Its rigidly controlled quality and excellent flow properties assure easier mopping, thorough coverage, and longer lasting roof life.

Johns-Manville Aquadam is specifically designed to provide maximum built-up roof service for deck inclines from dead level to ½″ per foot*.

Your local Approved J-M Contractor, listed in the classified telephone directory, has complete information about Aquadam Built-Up Roofs. Or write Johns-Manville, Box 158, New York 16, N.Y. In Canada, write 565 Lakeshore Rd. East, Port Credit, Ontario.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

Color Comes To The Kitchen with Customline Appliances. Make your choice from gleaming stainless finish, Coppertone and five new Colortones: Sunburst Yellow, Coral Pink, Meadow Green, Woodland Brown and Seafoam Blue.

COMPARE BUILT-INS AND YOU'LL SEE Hotpoint OFFERS GREATER VARIETY, FEATURES, PROFITS!

HERE ARE THE FACTS . . .

	Hotpoint	Major Brand "A"	Major Brand "B"	Major Brand "C"
OVENS				
Number of Models	5	2	1	2
Double-oven model	Yes	No	No	No
Rotisserie	Yes	No	Yes	No
Pushbutton Controls	Yes	No	No	No
Window in door	Yes	No	No	Yes
SURFACE UNITS				
Number of Models	5	2	2	3
Pushbutton Controls	Yes	Yes	No	No
Faster-than-gas unit	Yes	Yes	No	No
Deep-well cooker	Yes	No	No	No
Plug-in French Fryer	Yes	No	No	No

look to Hotpoint *for the finest...first!*

All built-ins aren't alike! A comparison of Hotpoint Built-In Ranges with those of the other 3 leading appliance manufacturers shows that Hotpoint offers you **more models** to choose from—**more features** to help you sell your homes. And, Hotpoint offers comparable superiority in built-in refrigerator-freezers and dishwashers as well.

It costs you no more to enjoy the extra sales appeal of these superior appliances, because Hotpoint wants builder business and has the prices to get it! And, with Hotpoint Customline, you also enjoy all these additional advantages:

- **Finest quality**
- **Fast, low-cost installation**
- **High consumer acceptance**
- **Powerful national advertising**
- **Strong local merchandising**
- **Top appraisal value**
- **Kitchen design service**

Whether you're building $10,000 or $100,000 homes, you'll find the right models for your market in Hotpoint's complete line. They'll help you sell your homes faster and at greater profit. Contact your Hotpoint Distributor's BUILDER SPECIALIST today!

Hotpoint 9-foot Modular Kitchen with high oven. Color is Sunburst Yellow.

they're here! Dramatic

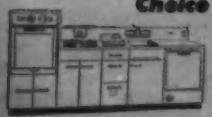
new Hotpoint modular kitchens

THE APPLIANCES OF THE FUTURE TO HELP SELL YOUR HOMES TODAY!

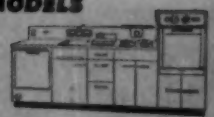
9 FEET OF GLEAMING PUSHBUTTON LUXURY—

- ★ DeLuxe Super Oven with Rota-Grill Rotisserie.
- ★ 4 Calrod® Surface Cooking Units, including raisable automatic unit under deep-well cooker.
- ★ Automatically-controlled Plug-In Griddle.
- ★ DeLuxe pushbutton Dishwasher.
- ★ Disposall® Food Waste Disposer (optional).
- ★ Seamless, stainless steel counter-top and sink with Wonderflo single-control faucet.
- ★ Pushbutton controls and appliance outlets.
- ★ Roomy storage cabinets and drawers.

Choice of *LEFT-HAND* or *RIGHT-HAND* MODELS



Available with cooking center at left or right end of unit at no extra cost. Provides greater planning freedom, enables you to reverse floor plans.



WITH HOME BUYERS

IT'S LOVE AT FIRST SIGHT

Hotpoint 7-foot Modular Kitchen with under counter oven. Color is Coral Pink.

Hotpoint 7-foot Modular Kitchen with separate wall oven. Color is Meadow Green.

IN ONE *COMPACT* UNIT—A COMPLETE MEAL PREPARATION *and* CLEAN-UP CENTER

Your homes will be "the talk of the town" with these exciting new Hotpoint Modular Kitchens. Women lose their hearts when they see the handsome combination of colored, pushbutton appliances and gleaming stainless steel countertop.

Distinctive and beautiful, compact and efficient, these units are the newest development in kitchens—and the hottest sales feature your homes can offer.

You'll like the way Hotpoint Modular Kitchens have been designed for fast, low-cost installation with normal skills and materials—no tricky hook-ups to cause expensive on-site slow-ups. And, these compact new units save floor space, while giving you complete freedom to plan kitchens that offer a new high in styling and convenience.

Hotpoint Modular Kitchens can be included on the mortgage for only a few dollars a month. They're available in 5 beautiful Colortones—Sunburst Yellow, Coral Pink, Meadow Green, Woodland Brown, and Seafoam Blue.

Be the first builder in your community to capitalize on this great new home selling feature. Contact your Hotpoint Distributor's BUILDER SPECIALIST today!

look to Hotpoint *for the finest...first!*

Crawford Corporation, Baton Rouge, La., provides builders with distinctive, modern homes—with selling prices ranging from $7,000 to $50,000.

"THOUSANDS OF Crawford HOMES WILL BE Hotpoint EQUIPPED IN 1956!"

The building industry recognizes W. Hamilton Crawford as one of America's leading manufacturers of high quality prefabricated homes. Mr. Crawford says—

"We selected Hotpoint for one good reason. The superior value and performance of Hotpoint Appliances are appreciated by everyone—prospective home buyers, appraisers, and lending agencies. People know you're giving them the best when they see the Hotpoint name."

Hotpoint Appliances offer you...

1. **An unequalled reputation for superior quality that helps you sell your homes.**

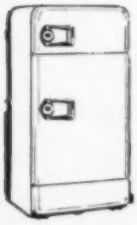
2. **A complete variety of prices, models, and finishes for homes in *every* price category.**

3. **Maximum evaluation and higher mortgages from financing agencies.**

4. **Powerful advertising and merchandising support.**

The Hotpoint name will help you sell and finance your homes—so contact your Hotpoint Distributor's BUILDER SPECIALIST for information about these famous appliances and the Hotpoint Kitchen-Laundry Design Service for builders!

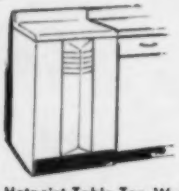
Hotpoint Home Laundries are completely automatic—they'll wash and dry ALL types of fabrics!



Hotpoint Refrigerator-Freezers feature "Big Bin" storage, Frost-Away defrosting, many other work-saving conveniences.

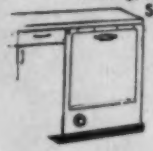
Hotpoint Built-In Appliances are available in Colortones, Coppertone, and Stainless Finish!

For beauty and distinction—Hotpoint Colortones or Classic White!



Hotpoint Table Top Water Heater—Famous Calrod® units assure Magic Circle® Heat!

Only Hotpoint Dishwashers offer Spot-Less Washing, Spot-Less Rinsing, Spot-Less Drying!



Famous Hotpoint Disposall® Food Waste Disposer—quiet and efficient!

Fast-heating Hotpoint Ranges cook everything in the book automatically!

LIVE BETTER ELECTRICALLY

look to Hotpoint for the finest-first!

RANGES • REFRIGERATORS • AUTOMATIC WASHERS • CLOTHES DRYERS • DISHWASHERS
DISPOSALLS® • WATER HEATERS • FOOD FREEZERS • AIR CONDITIONERS • CUSTOMLINE

HOTPOINT CO. (A Division of General Electric Company) 5600 West Taylor Street, Chicago 44, Illinois

IN OFFICE BUILDINGS

Mile High Center, Denver, Colorado. I. M. Pei, architect. Toplite Roof Panels contribute smart, distinctive styling to the canopy for this modern office building.

IN SCHOOLS

Hillsdale High School, San Mateo, California. John Lyon Reid and Partners, architect-engineers. Toplite panels evenly distribute daylight throughout the gymnasium.

IN HOMES

The activities room in this residence is well-lighted all day long because O-I Toplite Roof Panels permit daylighting without "hot spots" or glare.

IN COMMERCIAL BUILDINGS

T. A. Schutz Company, Morton Grove, Illinois. Seymour S. Goldstein, architect. Toplite panels may be installed in continuous strip, multiple or individual panels. Use a Toplite Panel as you would a lighting strip.

IN CHURCHES

Marian College, Poughkeepsie, New York. Ashton, Huntress and Pratt Associates, Lawrence, Massachusetts, architects. Toplite floods this handsome chapel with shadowless, well-distributed, diffused daylight. Glare of old-fashioned skylights is eliminated.

OWENS-ILLINOIS TOPLITE ROOF PANELS...

for better daylighting everywhere!

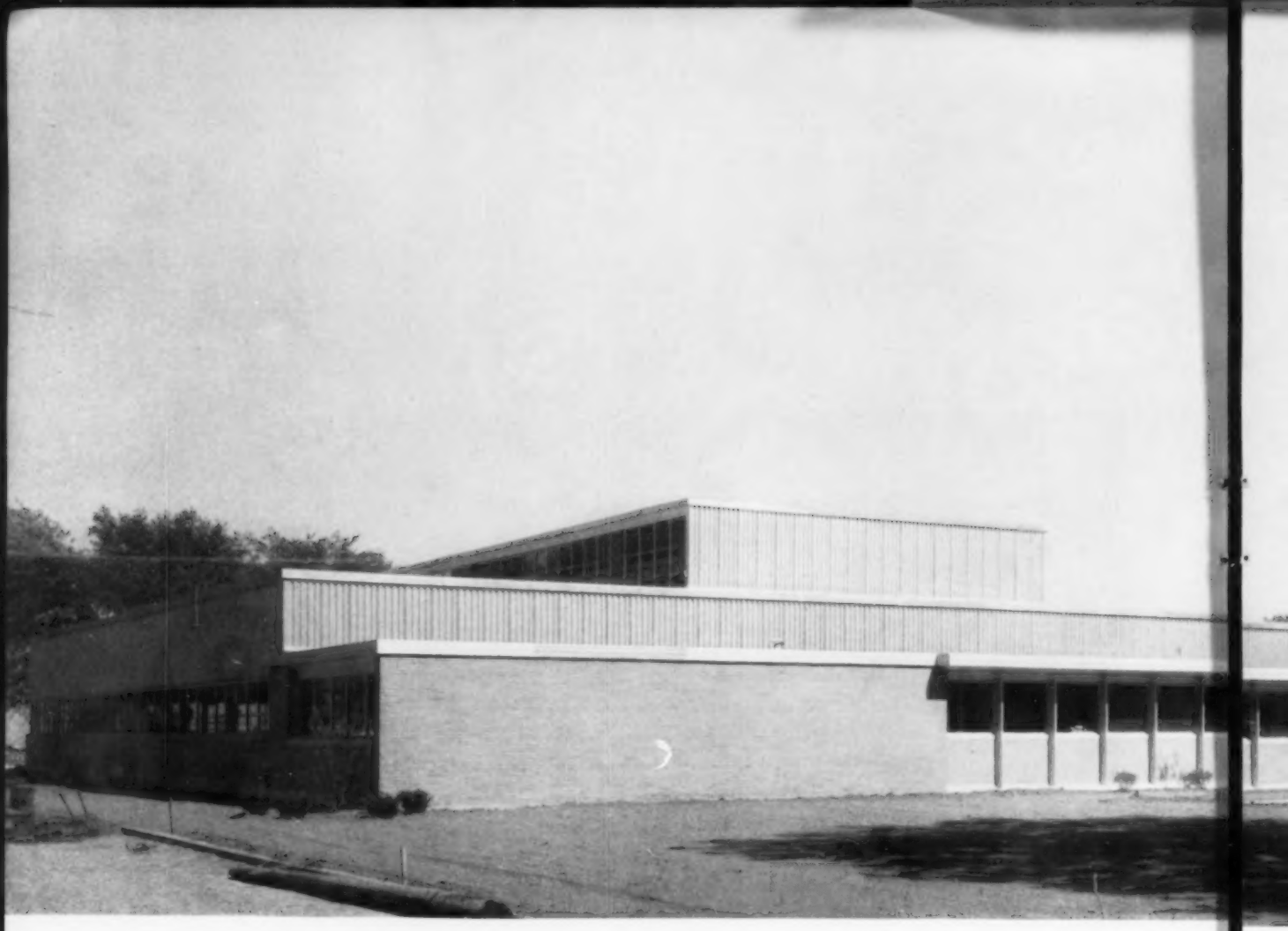
Here are five dramatic case histories of Owens-Illinois Toplite Roof Panels in action . . . five diverse examples of how this great advance in daylighting is solving lighting problems all over the country.

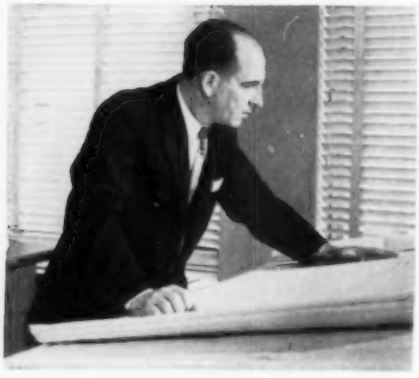
Toplite Roof Panels supplement light from sidewalls in deep areas or completely daylight windowless areas. Glare and heat of old-fashioned skylights are eliminated because prismatic glass units built into Toplite "think" before they transmit the sun's rays. Needed North light and the soft, low rays from the South are readily accepted while high summer sun rays are rejected.

The complete story of this important new improvement in efficient utilization of free daylight is available in a new booklet on Toplite Roof Panels. For your free copy, write Kimble Glass Company, subsidiary of Owens-Illinois, Dept. PA-7, Toledo 1, Ohio.

TOPLITE ROOF PANELS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

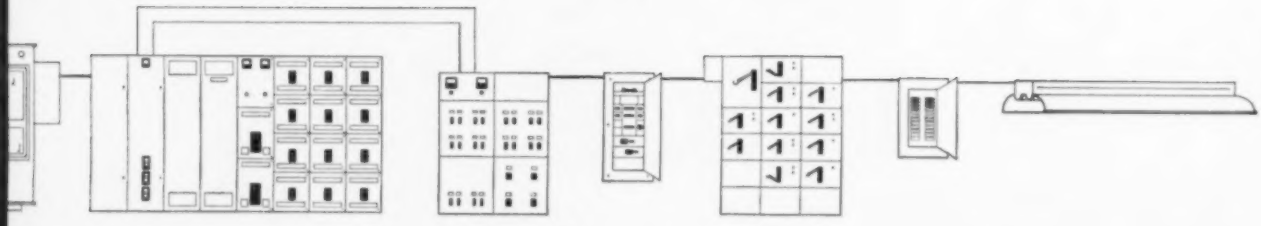


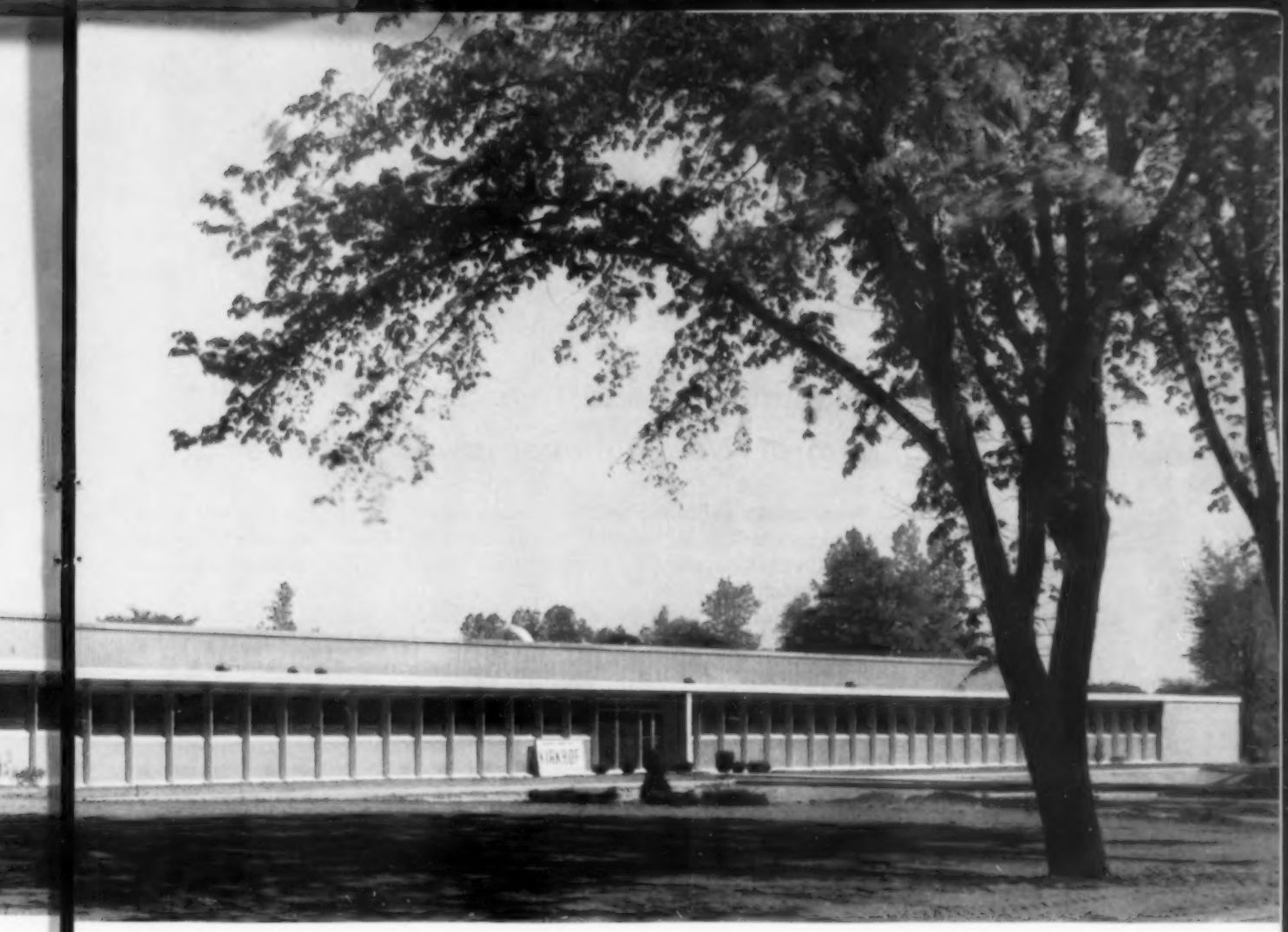


Above: Kirkhof Electric Manufacturing Company, Grand Rapids, Michigan.

J. & G. Daverman Company, architects Grand Rapids, Michigan

Left: Jim Witherspoon, Westinghouse Construction Sales Manager and Headquarters Member of the Complete Planning Service Team.





The electrical system story of today's factory

The beauty and function of today's factory are not confined to external appearance. Inside, behind the scenes of industrial activity, the electrical system and equipment have taken on a modern look.

Just as much operational efficiency is planned for the electrical system as is maintained in actual production work. To guide the planning and installation of that equipment, Westinghouse offers the aid of a Complete Planning Service team.

One call to the Westinghouse man in your area starts the operation. At your disposal from preliminary planning to job completion are the experience and know-how of the entire Westinghouse organization.

For anything electrical, you can be sure if it's Westinghouse. (*Continued next page.*)

DP-5023-A

WATCH WESTINGHOUSE!

*WHERE **BIG** THINGS ARE HAPPENING FOR **YOU!***

Be sure to take advantage of this consulting service during planning.

Minimum M and I costs* aim of Westinghouse switchgear design

Keeping down switchgear maintenance and inspection costs, two big profit eaters in today's factory, is the aim of Westinghouse switchgear. The drawout breaker design makes certain you accomplish these two activities with the least amount of down time.

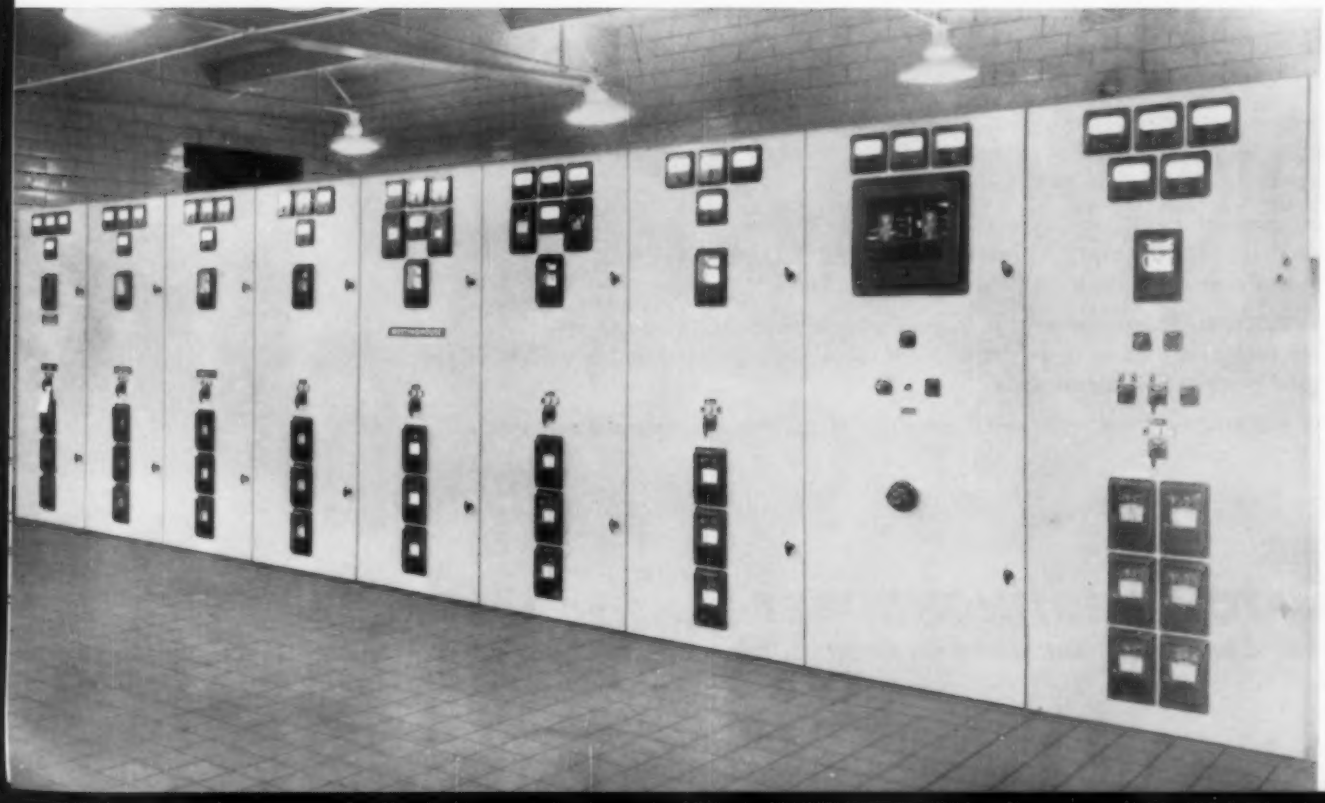
This design, a Westinghouse first in the industry, enables you to draw out breakers horizontally whether they are high or low voltage. No lifting or lowering is necessary. (See photos, left.)

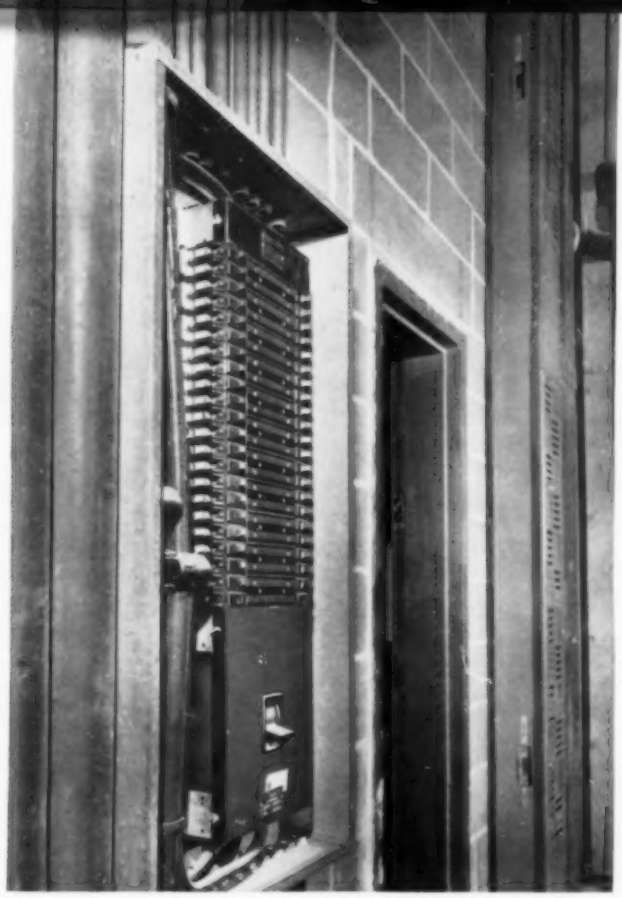
Safety to personnel handling these activities is assured with the Westinghouse design, too. Tested and proved features include full steel barriers to separate compartments, fully insulated buses and automatic interlocks.

Allow the Westinghouse switchgear specialist in your city to help you with your special projects. He's ready to help your planning whether on factory, school, commercial building or any other projects on the boards. And you can be sure if it's Westinghouse.

DP-5023-B

*Maintenance and inspection costs.





Westinghouse panelboards provide complete circuit protection

Distribution control points throughout factories can have the advantage of "De-ion®" circuit breakers when Westinghouse panelboards are specified. This protection is available for both lighting and power boards.

One investment is the final cost, too. There is nothing to replace, whether one interruption or a dozen. A flip of the breaker handle restores power when an outage happens. If trouble on the circuit is still present, the breakers continue to trip automatically until the trouble is corrected.

In addition, Westinghouse circuit breakers and panelboards—through coordinated design—provide easy installation and maintenance-free operation.

WATCH WESTINGHOUSE *WHERE* ***BIG*** *THINGS ARE HAPPENING FOR* ***YOU!***

Column-type panelboards designed for spacesavings and low-cost installation

Column-type panelboards are narrow, single-row construction designed primarily for mounting in H or I beams, where available wall space is limited. To take full advantage of this type of panelboard, the use of extension troughs and pull boxes is recommended.

Call on your Westinghouse panelboard sales engineer for design and planning assistance. Remember, you can be sure if it's Westinghouse.

DP-5023-C

WATCH the WESTINGHOUSE
sponsored convention telecasts
August 12, Democratic Convention—
August 19, Republican Convention.

From planning to project completion, Westinghouse experience is at your service.

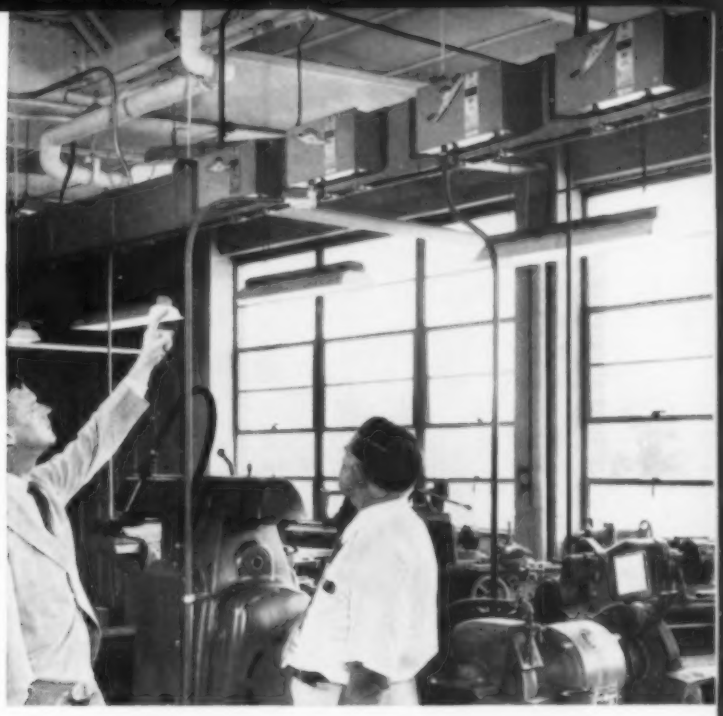
Industry-approved fluorescents help boost employee, plant efficiency

Westinghouse fluorescent luminaires add extra light to your plant simply by making use of all the foot-candle output. And without any harsh, eye-fatiguing glare. The reason why is in the design.

Slotted reflectors turn 20% of the light upward, towards the ceiling, to bounce off it and other overhead objects before illuminating the work area below. This diffused, comfortable light combines with the direct 80% output to give an over-all increase in quality industrial lighting. Both men and machines benefit.

Fast installation methods prevail on a Westinghouse RLM job because they are light weight, easy to handle, and have completely wired channels. This helps to lower first costs considerably. Heavy-duty steel lamp holders keep maintenance and replacements down.

Notice proof of the extra light in the installation below. You can be sure if it's Westinghouse. DP-5023-D



An industrial must, aluminum bus duct now 15-25% cheaper

No other current-carrier offers as many advantages to user, installer and designer as aluminum bus duct. And now Westinghouse makes it available to your customers at 15-25% less than copper duct.

The same top quality and performance heretofore obtainable only with copper is guaranteed with Westinghouse aluminum duct. A new electrotype plating process protects aluminum from the dangers of high-resistance splices forever.

Being light weight (up to 35% less), Westinghouse duct handles well. Installs faster. Prefabricated in convenient sections it not only goes up quickly but allows complete design freedom. Angles, elbows, tees—almost any kind of shape—are standard.

Westinghouse can supply all the planning plus additional reasons why aluminum bus duct is the best distribution system material for you. Call today or write for booklet B-6740, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna.

Shown at right is the Westinghouse exclusive vertical mounting hanger which equalizes weight of duct among all supports, rather than concentrating the weight of the entire vertical riser on the bottom hanger.

DP-5023-E

WATCH WESTINGHOUSE!

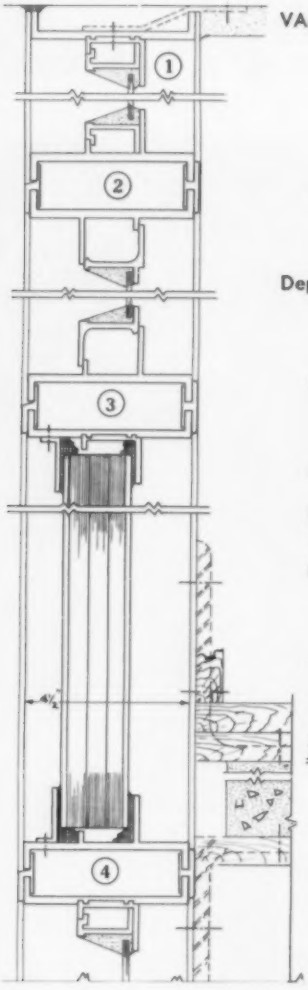
WHERE BIG THINGS ARE HAPPENING FOR YOU!

WATCH the WESTINGHOUSE sponsored convention telecasts August 12, Democratic Convention— August 19, Republican Convention.

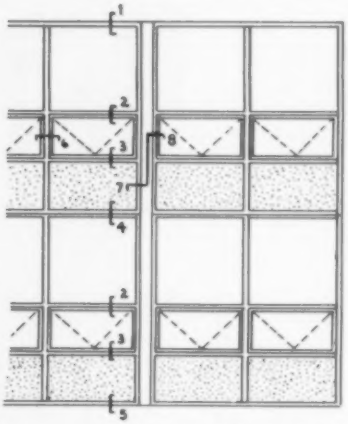
Westinghouse Complete Planning Service Team is ready to go to work with you on your next project. Call them in at once.

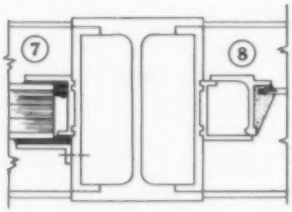
Catholic Central Faculty Bldg.
Detroit, Mich.
Charles D. Hannan, Arch.
Cooper Const. Co., Cont.

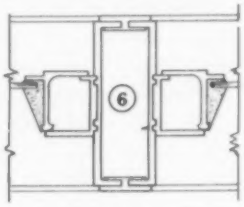
VAMPCO WINDOW WALL

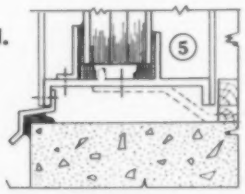


An outstanding example of VAMPCO'S Heavy Ribbon section Window Wall! Charles D. Hannan, the architect, chose this type of construction for the beautiful Catholic Central Faculty Building in Detroit, Michigan. This is only one of the many modern installations of VAMPCO WINDOW WALL under construction at the present time. This type of section can be adapted to your individual design. Our Engineering Department is available to you for further information. VAMPCO Windows are in Sweet's File or you may write Dept. PA-76 for particulars.









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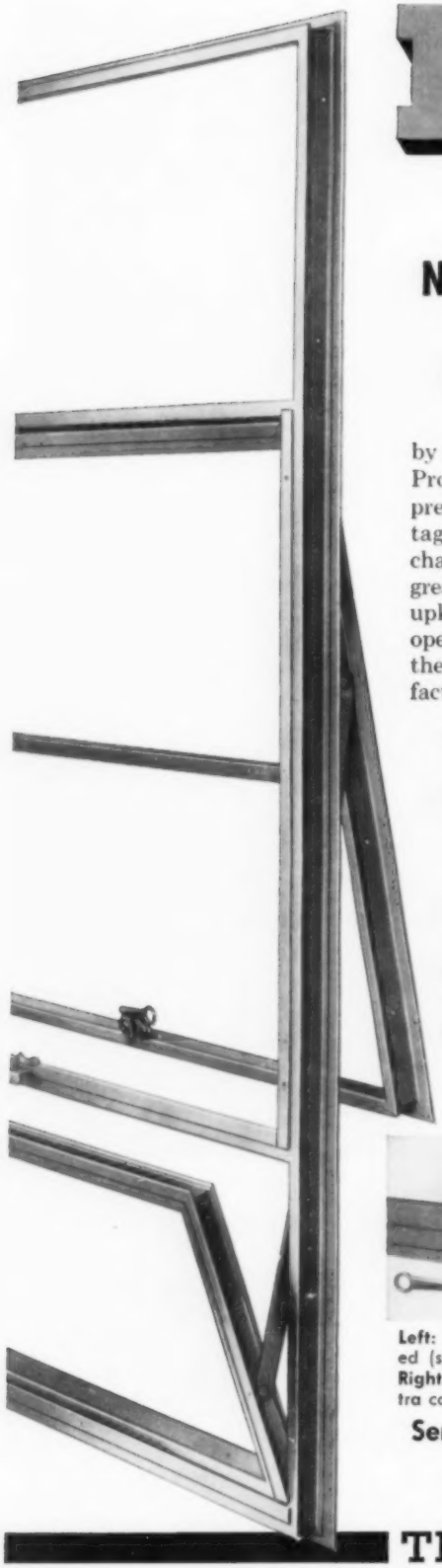
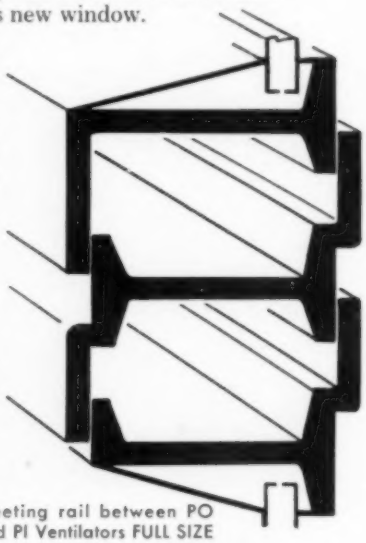


Bayley

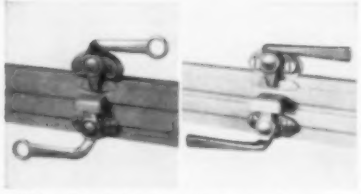
introduces a NEW STANDARD of construction in a STEEL HEAVY INTERMEDIATE PROJECTED WINDOW

Featuring new one-piece solid hot-rolled sections assembled by machine welding, this new Bayley Steel Heavy Intermediate Projected Window now offers you a window that exceeds all present industry standards. It retains the time-proven advantages of Bayley section design *plus* new shape and weight characteristics, hardware and fabrication details that result in greater strength, better weathering and maximum freedom from upkeep — an extraordinary dollar value in window service and operating qualities. The features listed below readily reflect the Bayley window engineering experience and modern manufacturing methods embraced in this new window.

- 3.5 lbs. per foot weight of ventilator frame and jamb
- Sections (one-piece) 1½", 1⅝" and 1¾" deep — with wide parallel double-contact weathering rolled integrally
- Joinery — machine welded and finished
- Outside glazed — accommodates ½" insulated glass
- Wide triple-contact brass friction shoes assure smooth operation of ventilators



Meeting rail between PO and PI Ventilators FULL SIZE



Left: Steel handle fastener, lacquered (standard)
Right: Bronze handle fastener (at extra cost)

Meets STEEL WINDOW INSTITUTE'S Specifications

Send Today for complete specifications — or consult your local Bayley Representative. Also see Bayley in Sweets — 17a/Ba.

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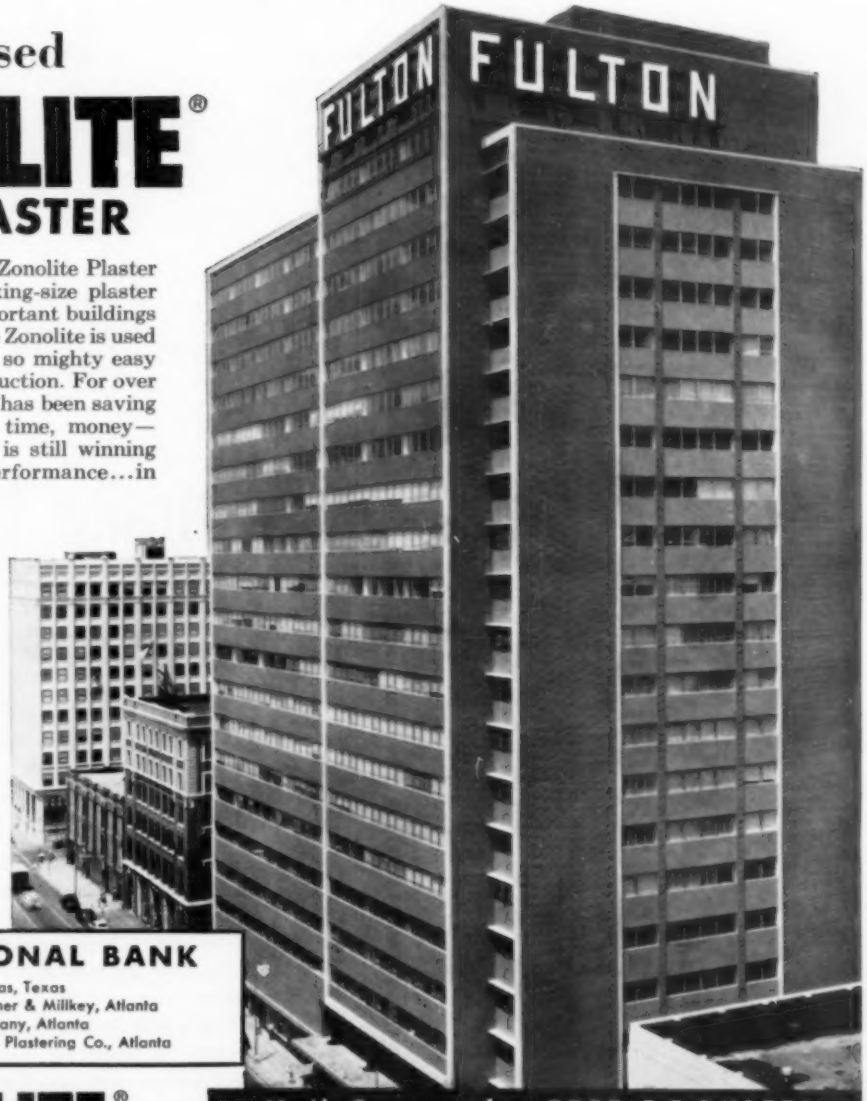
FOR ATLANTA'S BIGGEST PLASTER JOB IN YEARS...

...they used ZONOLITE® *time-tested* PLASTER

Eighteen thousand bags of Zonolite Plaster Aggregate went into this king-size plaster job. It's *one more* of the important buildings throughout the nation where Zonolite is used because it is low-in-cost, is so mighty easy to handle and speeds construction. For over 20 years *time-tested* Zonolite has been saving architects and contractors time, money—*headaches!* Today, Zonolite is still winning the "blue-ribbons" for performance...in buildings like Los Angeles' famous Beverly Hilton Hotel...the just-completed headquarters building of Ford Motor Company in Dearborn, Michigan...the new Prudential, 41-story building on Chicago's skyline. Zonolite lightweight plaster earns the highest fireproofing rating...is low cost...handles *fast* by hand or machine...is always readily available from over 40 processing plants. Write for full particulars.



FULTON NATIONAL BANK

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Associate Arch.: Moscowitz, Wilner & Millkey, Atlanta
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"Electricity is an ever-increasing influence in today's life. It is one of the forces of progress; it is an improvement of our surroundings. It is an integral part of any design for modern living, and thus of particular interest to architects.

"The LIVE BETTER ELECTRICALLY program, as it increases the home owner's awareness of the advantages of electrical living, will give the architect new scope and flexibility of design. It will enable him to incorporate more labor-saving, leisure-making electrical servants in modern homes. The program will add to the understanding and efficiency of builders and electrical contractors. It will help architects carry out their ideas for today's better homes . . . and for the better homes of tomorrow."

"...will help architects carry out their ideas for today's better homes"

How architects can make the most of LIVE BETTER...

LIVE BETTER ELECTRICALLY is a long-range, industry-wide program coordinating the efforts of over 300 utilities with appliance manufacturers, distributors, dealers, architects, builders, realtors, contractors and bankers to promote the benefits of electrical living to the entire nation.

That's why architects all over the country are enthusiastically participating in the LIVE BETTER ELECTRICALLY program. They are benefiting by the better understanding and acceptance of the literally hundreds of ideas for better electrical living that they incorporate into their plans. Not only the architects' clients, but builders

Marcel Breuer is one of our leading modern architects and designers. The scope of his work runs from many houses over the world to the new UNESCO Headquarters Buildings in Paris. Mr. Breuer's philosophy as an architect was recently published in his book "Sun and Shadow."

Electrically

LIVE BETTER ELECTRICALLY

and electrical contractors are being made increasingly conscious of the many ways electricity can be used to plan better homes. The LIVE BETTER ELECTRICALLY program will continue to increase this awareness during the years ahead.

A new 72-page idea book for home owners is receiving nationwide distribution. It contains hundreds of fully illustrated ideas, plans, arrangements, installation tricks and suggestions for better electrical living. Your clients will be reading this book. If you would like a copy, call or write your local utility company, or mail the coupon at right with 10¢ to cover the cost of handling.

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Please send me a copy of "New step-by-step ideas to help you LIVE BETTER ... *Electrically*." I enclose 10¢ to cover cost of handling.

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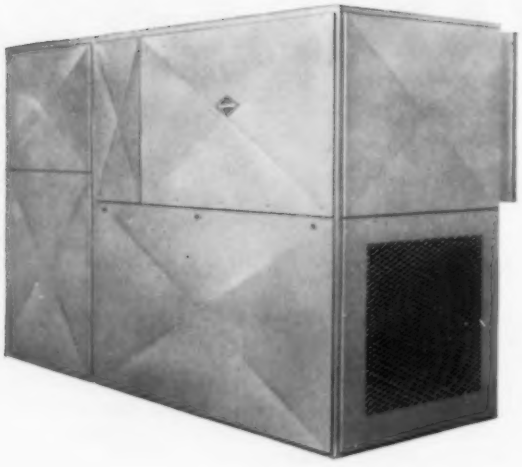
8-902-13

• • • One of the nation's largest retail food chains, this Kroger outlet in Detroit is cooled by the UNARCO AECR

today's stores need BETTER than adequate AIR CONDITIONING



The purveying of meat, produce and groceries in today's giant supermarkets is big business. Business so important that it's poor judgment not to utilize the best air conditioning equipment available. For air conditioning has a direct effect on the quality of a store's perishables ...on a store's customers...and on employee morale.

Model AECR shown to the left represents the ultimate in air conditioning equipment. This unit, of single-cabinet construction, functions as a complete air conditioning unit, including heating if desired. It is equipped with built-in, specially designed evaporative condenser for minimum water consumption. (Where water-cooled condenser is desired, specify Model SCR.) A full range of capacities from 7½ through 60 tons makes this the ideal conditioning unit for stores, large offices and industrial installations. For a detailed brochure, write the Air Conditioning Division, Dept. 101.

UNION ASBESTOS & RUBBER COMPANY
Air Conditioning Division
332 S. Michigan Ave., Chicago 4, Ill.

For commercial and industrial installations using chilled water systems UNARCO also manufactures large capacity chillers (7½ to 75 h.p.) and air handling units.

UNARCO

DESIGNERS...ENGINEERS... FABRICATORS OF AIR CONDITIONING EQUIPMENT

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Brown & Grist Window Walls

Save today . . . Save tomorrow. That's what the architects planned for G.E.'s new Outdoor Lighting Plant in Hendersonville, N.C. That's why they specified Brown and Grist aluminum window walls.

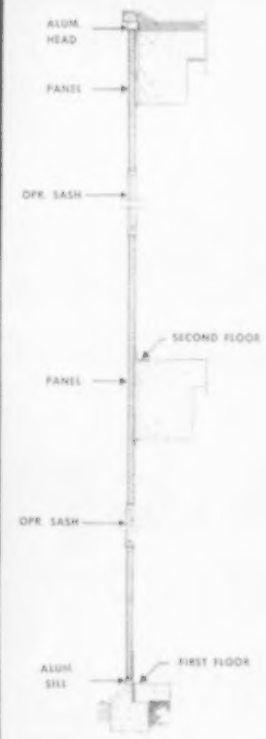
First, Brown and Grist window walls save on installation and construction. In the G.E. Outdoor Plant, two floors went up at a time, with the speed and ease of prefabs. Yet the cost was below that of old style walls.

Long range savings are yours, too. This new type wall construction makes future growth simple and low cost. Whole wall-sections come down easily to make way for new construction. And panels can be reused in the enlarged building. Maintenance is next to nothing.

Unusually flexible in design and materials, Brown and Grist window walls add a new dimension to architecture. Panels vary to suit your needs—from 1/8" sheet asbestos to handsome porcelainized steel or aluminum.

All this with low cost and high quality. Get the full details plus free catalogs on these sturdy, light-weight window walls. Write or wire today. Brown and Grist engineers will work closely with you to meet your own specifications.

See Sweet's Vol. 17 a/Br and 3 a/Br



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B·G

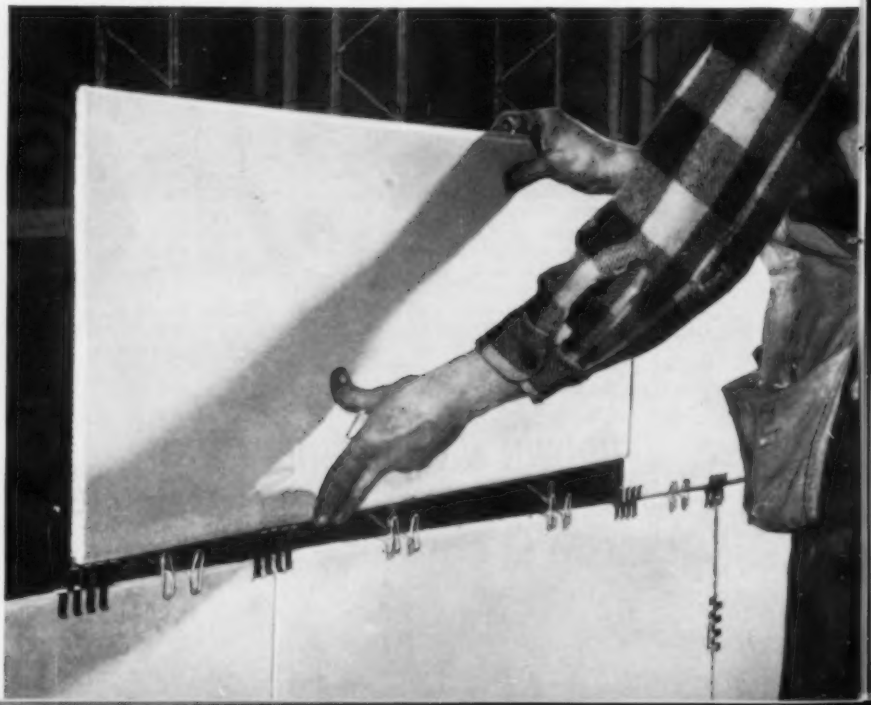
ONE- TO FOUR-HOUR FIRE RATING for floor-ceiling constructions is achieved with BRACE-TITE* Lathing System. ROCKLATH* gypsum lath is attached to standard metal grillage, forming an ideal base for plaster or acoustical tile. *Pressure* action of clips supports the lath across its full width. Easy, quick and economical to install—no special tools required.

FOR FINE INTERIOR FINISHING specify new USG* 3/8" RIBLATH, now a full 27" wide—plastered with RED TOP* STRUCTO-LITE* gypsum basecoat plaster, mill-mixed for uniform set and perlited for 50% less framing load. More fire-resistant, too. Top off with IVORY* finishing lime, double-hydrated to provide a smooth, flawless decorating surface.

VERSATILE INTERIOR CONSTRUCTIONS MEET RIGID PERFORMANCE REQUIREMENTS

Time-proved partition systems and lathing systems serve a variety of needs

Designing and specifying are simpler, yet more precise, with U.S.G. products and systems. They're made to work together, giving you top performance and quality backed by one dependable manufacturer. For details on these U.S.G. interior constructions, see Sweet's Sections $\frac{12a}{Un}$ and $\frac{12b}{Un}$.



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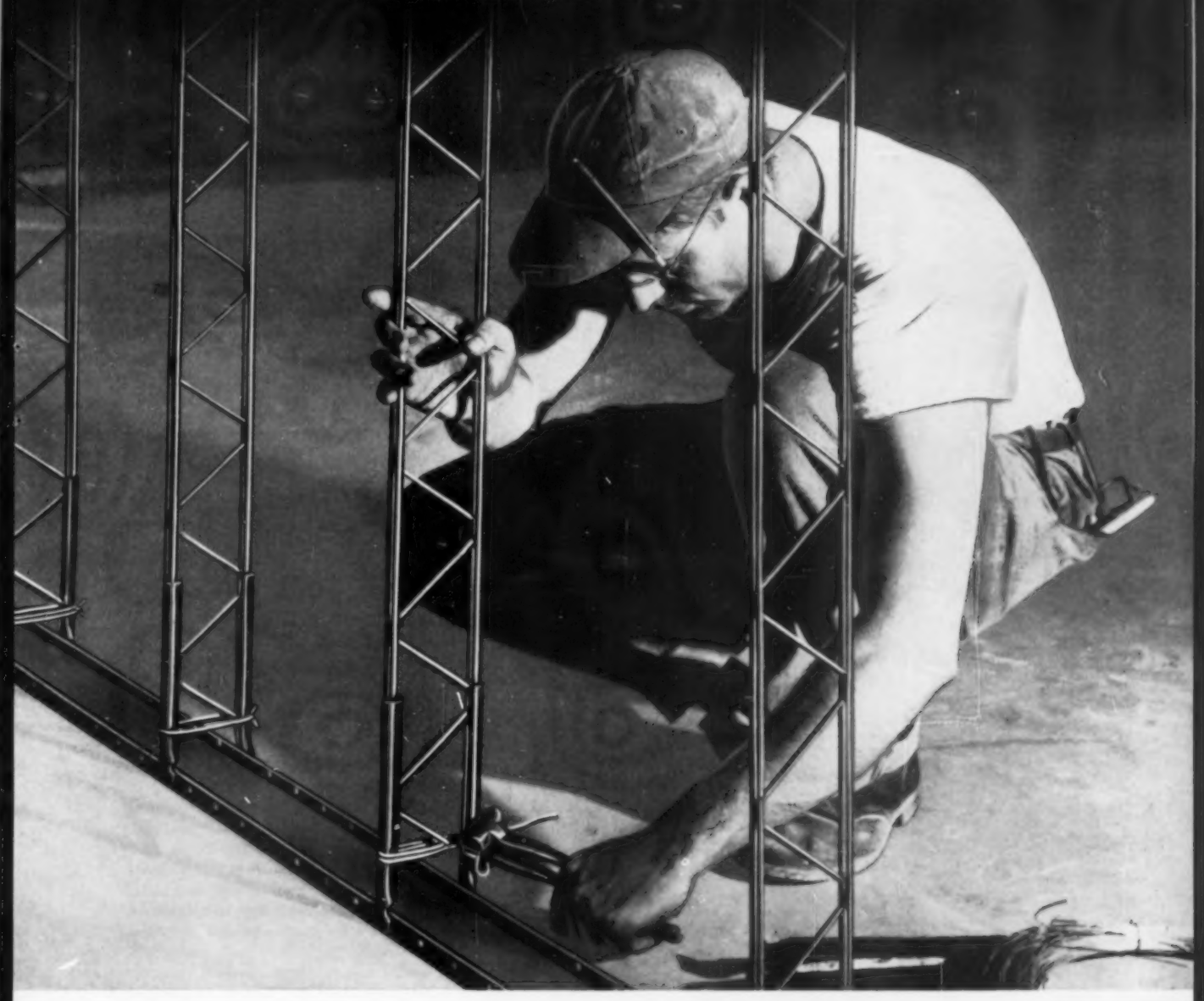
Creative materials for creative architecture



FAST-ERECTING HOLLOW PARTITION of TRUSSTEEL* studs (above) and ROCKLATH plaster base offers more open space for utilities than other comparable assemblies. Simplifies concealment, cuts costs of installing ducts, conduits, wiring. Lightweight, only 10-15 lbs. per square foot; yet strong, like the open-web struts of aircraft wings.

NEW SNAP-ON ATTACHMENT CLIP (left), called TRUS-LOK*, secures plain or perforated ROCKLATH to TRUSSTEEL studs. Reduces lathing costs, helps increase sound resistance. Complete assembly provides a sound transmission rating of up to 46.5 decibels. It's fireproof too—typical 5¼" partition has a fire rating of one hour. Stud widths vary from 2½" to 6".

*T.M. Reg. U. S. Pat. Off.

For complete information on products shown here, fill in this coupon and mail to United States Gypsum, Dept. PA-64, 300 West Adams Street, Chicago 6, Illinois.

☐ BRACE-TITE Lathing System ☐ ¾" RIBLATH ☐ STRUCTO-LITE Perlited Gypsum Basecoat Plaster
☐ IVORY Finishing Lime ☐ ROCKLATH Plaster Base ☐ TRUSSTEEL Stud, ROCKLATH Partition System

☐ Please have your Architects' Service Representative call on me.

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keeping exterior stone and brick looking clean and new:

Ford Rotunda, Dearborn, Michigan

WATER ABSORPTION TESTS ON LIMESTONE BLOCKS

Material	Period of Time Exposed to Weather	Percent of Absorption After 3 years, 8 months exposure to weather then totally immersed for 48 hours
Limestone coated with "Super-Por-Seal with Silicone"	3 years, 8 months	.44%
Untreated Limestone	3 years, 8 months	3.18%

WTMJ, Milwaukee, Wisconsin

University of Detroit Memorial Bldg., Detroit, Michigan

Fine architectural structures too soon become begrimed and unsightly unless protection against weathering is provided at the time of construction. The problem, which is mainly the repelling of water, is greatest when the exterior surface is limestone, porous brick, concrete or stucco.

Discoloration of exterior masonry usually reaches such an advanced stage that sand-blasting, or steam-cleaning, is employed to restore a look of newness to the surface. And although this process rids the surface pores of dirt, it also opens up the pores still more, so that subsequent discoloration progresses even faster than before.

The solution to the problem of discoloration lies in attacking the very root of the trouble. Discoloration is caused by rain washing down over exterior surfaces and carrying with it soot, grime and dust, depositing such material in the surface pores. When the water is repelled instead of absorbed, discoloration does not occur. But the problem is greater than would appear at first glance. It is not so much to find a colorless repellent that will repel water as it is to find a repellent that will *keep on* being effective over a period of years.

Truscon "Super-Por-Seal with Silicone" combines the weather resisting and water repellent features necessary to protect the finest types of construction materials. Limestone and other fine structural stones retain their natural appearance and beauty longer.

Spalling and discoloration are the common causes of unsightly appearance. A single coat of "Super-Por-Seal with Silicone" will help to maintain the dignity of appearance of fine structures for years. Absorbent types of surfaces, such as common red brick and mortar, are likewise protected against water and dirt absorption, as the surface pores are actually lined with repellent and chemical resistant "Super-Por-Seal with Silicone."

For details and specifications write Truscon Laboratories, Dept. P-5, Detroit 11, Michigan

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56 Miles of General Electric Fiberduct provide electrical efficiency for world's largest stainless steel building

In planning the electrical system for this massive new 45-story "building of tomorrow," (the world's largest completely air conditioned commercial office building) the engineers and designers specified General Electric Fiberduct underfloor wiring systems. This assures that the building will meet initial electrical needs adequately and, at the same time, provide the flexibility needed for future electrical expansion. For example: the 14,000 outlets needed at present can be expanded to as many as 150,000 without major alterations!

Because the efficient use of business and institutional real estate is so important today—it will pay you to investigate G-E Underfloor Wiring Systems. Call your G-E Construction Materials district office, or write to Section C68-768, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

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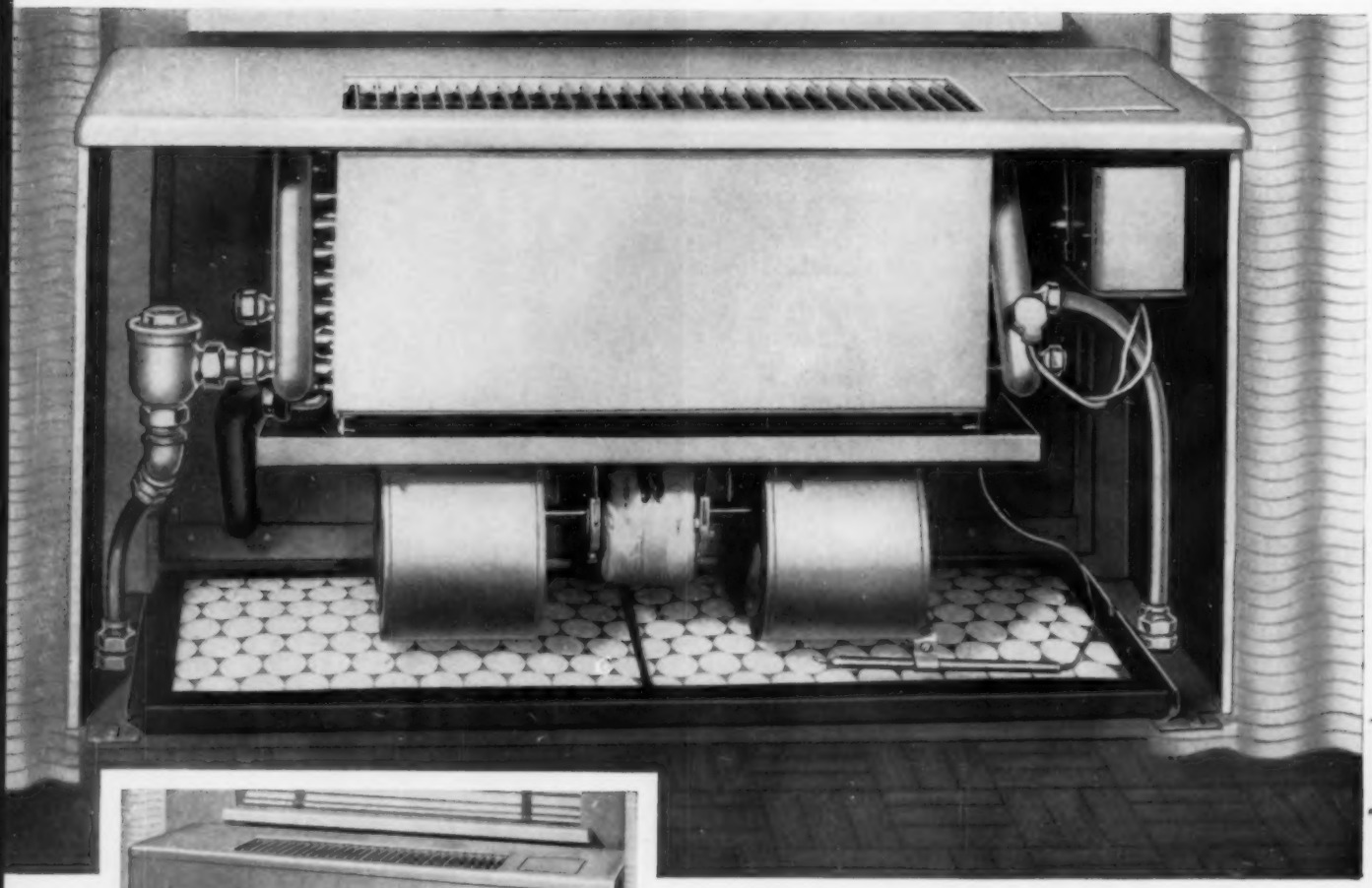
GENERAL ELECTRIC

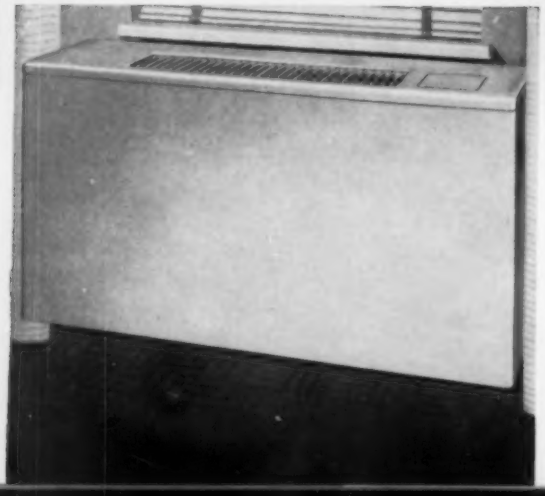
The gleaming stainless steel Socony Mobil Building occupies a full block on 42nd Street near Grand Central Station, New York City.
Owner: Galbreath Corporation; John W. Galbreath, Peter B. Ruffin
Associated Architects: Harrison and Abramovitz; John B. Peterkin
Electrical Consulting Engineers: The Firm of Edward E. Ashley
Electrical Contractor: Fischbach and Moore, Incorporated
General Contractor: Turner Construction Company

AMERICAN-Standard products in the news

New Design Drinking Fountains

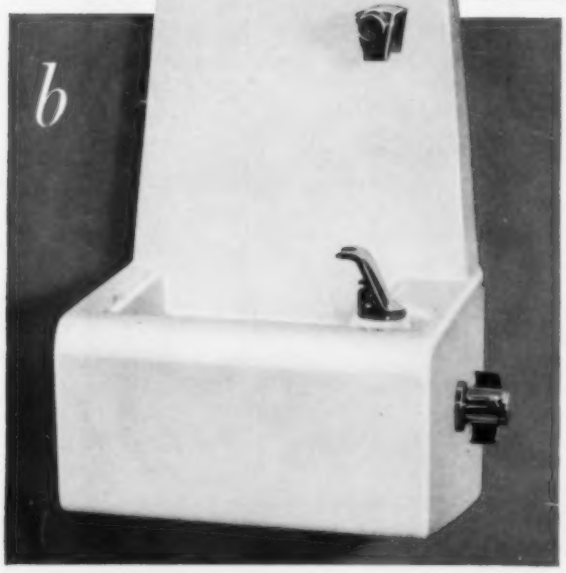
Self-Contained Remotaire

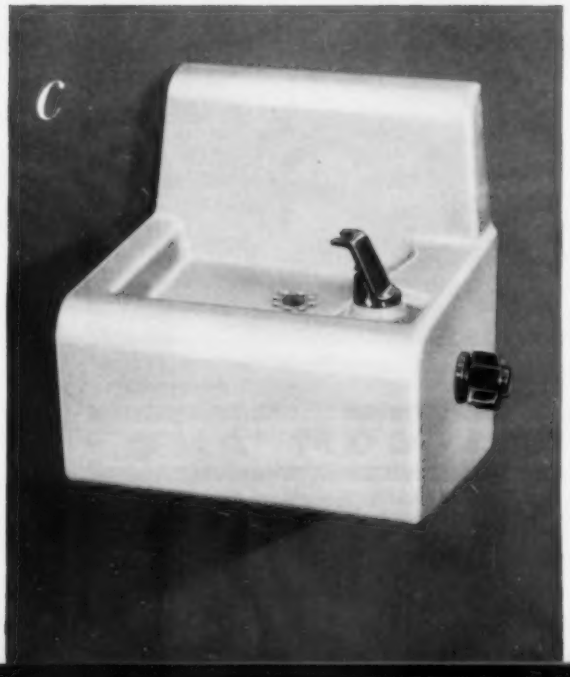




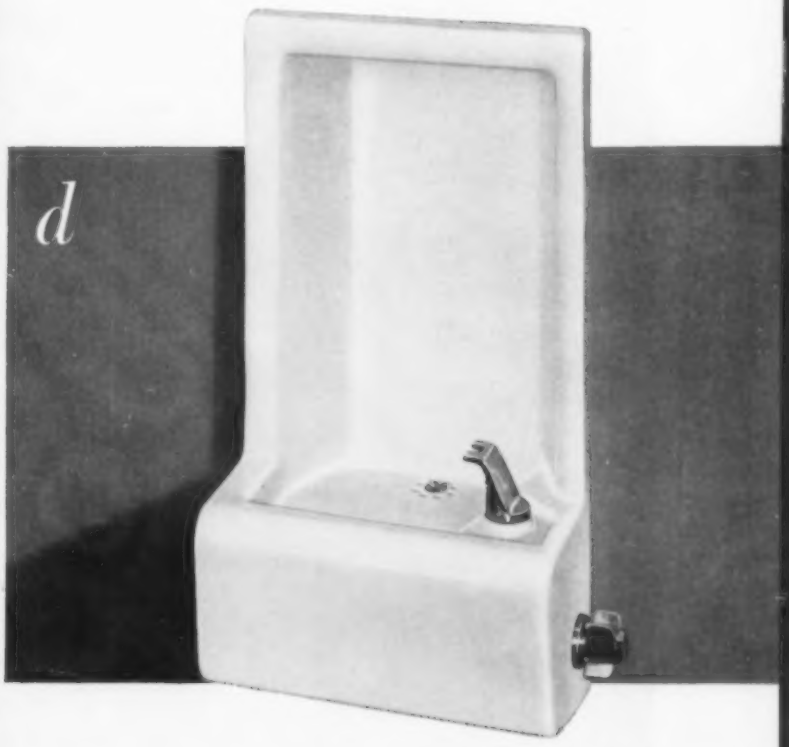
HEATING AND COOLING IN ONE SELF-CONTAINED UNIT. Here's the fast, inexpensive, convenient way to air condition hotels, offices and institutional buildings—especially existing structures. No central plant equipment is required. Installation can be made quickly in any room or on any floor without affecting the rest of the building. The new Self-Contained Remotaire heats, cools, ventilates, filters and exhausts. Each unit has a complete, built-in refrigeration circuit. Provision is made for connection to existing two-pipe steam or hot water heating systems. Mounted into and supported by the wall, the Self-Contained Remotaire projects less than 11" into the room. Cabinet dimensions are 21½" high and 40" wide.

General Contractor: Turner Construction Company





NEW AMERICAN-STANDARD FOUNTAINS have a simplicity of design that fits perfectly with the modern architectural trend. And they are available in a wide variety of sizes, styles and colors. The examples shown here are (a) Sharon, (b) Calistoga, (c) Saratoga, and (d) Tioga. They'll not only add to the appearance of the buildings you plan, but also afford extra years of service for your clients. The one-piece bubbler—of non-tarnishing Chromard—allows easy cleaning, and is designed to prevent squirting or direct contact with the nozzle. The Nu-Re-Nu valve assures dependable operation.



FOR MORE INFORMATION about American-Standard plumbing and heating-cooling products, write to AMERICAN-STANDARD PLUMBING AND HEATING DIVISION, 40 West 40th St., New York 18, N.Y.

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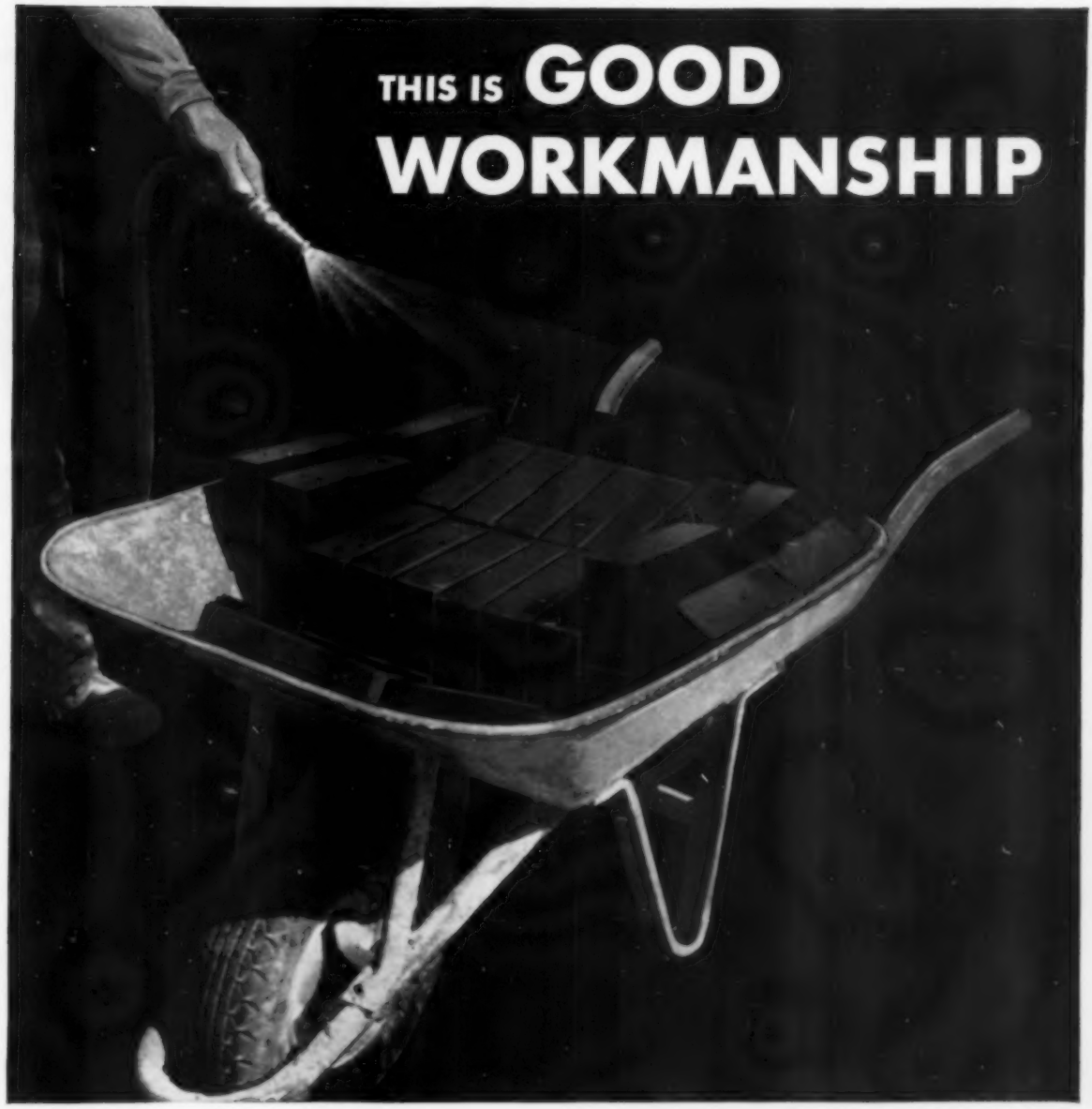


GOOD workmanship is one of the most important factors in preventing leaky brick walls.

Good workmanship includes wetting the brick—completely filling the head and bed joints—and back-plastering the face brick.

Expect trouble when dry, absorbent brick are placed in the wall. If their rate of absorption is too high at the time they are laid, they will suck the water out of the mortar too fast, even though the mortar has high water-retaining capacity. The result may be a poor bond, and a leaky wall.

Brixment mortar has high water-retaining capacity. It resists the sucking action of the brick. It stays plastic and workable longer. Brixment mortar therefore provides added protection against excessive absorption—but even when Brixment mortar is used, absorbent brick should still be wetted.

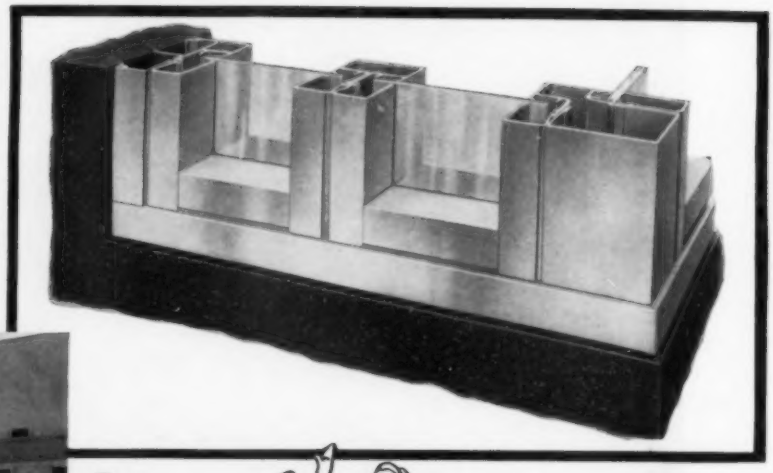
In addition to great plasticity, high water-retaining capacity, and bonding quality, Brixment mortar has great resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

BRIXMENT

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

NEW ON THE STORE

BRASCO DIRECT-ON-MASONRY SETTINGS



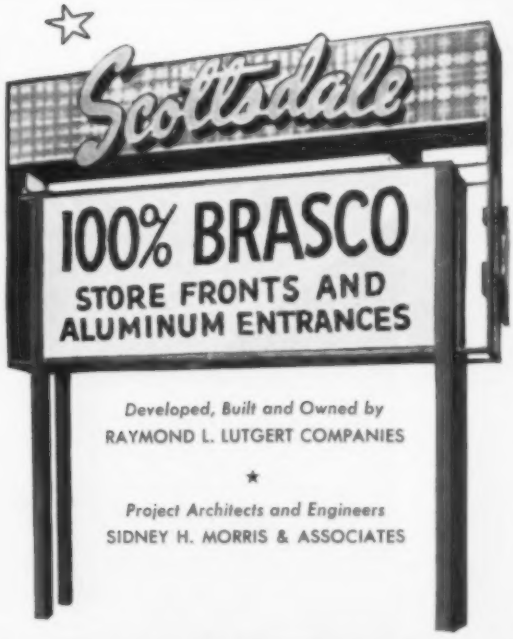
DISTINCTLY AN INNOVATION, Brasco Direct-on-Masonry Settings mark a notable advance in the effects possible with exterior design treatment. The new all-extruded construction is set directly on masonry, marble, steel, granite, etc. It eliminates conventional woodwork, provides greater durability and reduces overall costs.

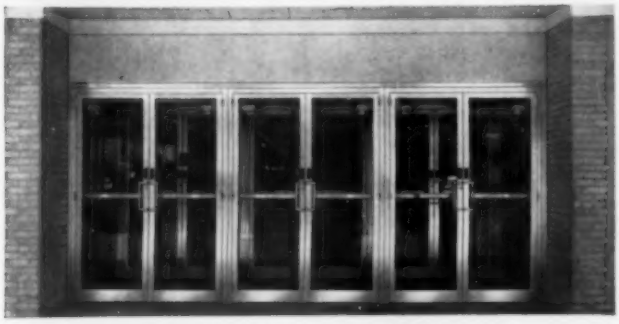
All fastenings are concealed, adding unmarred beauty of line to the entire store front assembly. Designed to harmonize perfectly in structure and appearance with Brasco or other entrances, the new settings provide the utmost in appearance, strength, safety and economy.

Brasco Aluminum Entrances also adorn the many fine shops and stores at Scottsdale. Both our Standard and De Luxe Entrances are seen in single and multiple units. Many utilize side lights or center lights and some are equipped with automatic door controls. All Brasco door construction is thru-bolted *and* welded, assuring long and faithful service regardless of weather and customer traffic.

FRONT HORIZON

SCOTTSDALE SHOPPING CENTER
CHICAGO





Brasco De Luxe Entrances at Goldblatt's

Brasco Standard Entrance to Medical Center and Owner's Offices

NEW, BIG AND BEAUTIFUL, incorporating the latest developments in shopping center architecture, Scottsdale is already taxing its generous parking facilities. Here indeed is a veritable showcase of Brasco metal products, of special interest to owners, architects, designers and builders. See Scottsdale when you're in Chicago. Write for complete Brasco information and New Construction Details.

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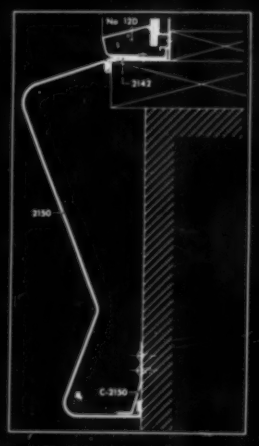
Architectural Metal Products for more than 45 Years

Look at it from this angle



In fact, any angle. This moulding, like all Pittco Metal, has a pleasing way of blending with surroundings, of expressing light and shadow, serving as a sill, an awning facia or as a decorative band. For complete details, see your Pittco® Store Front Metal Representative.

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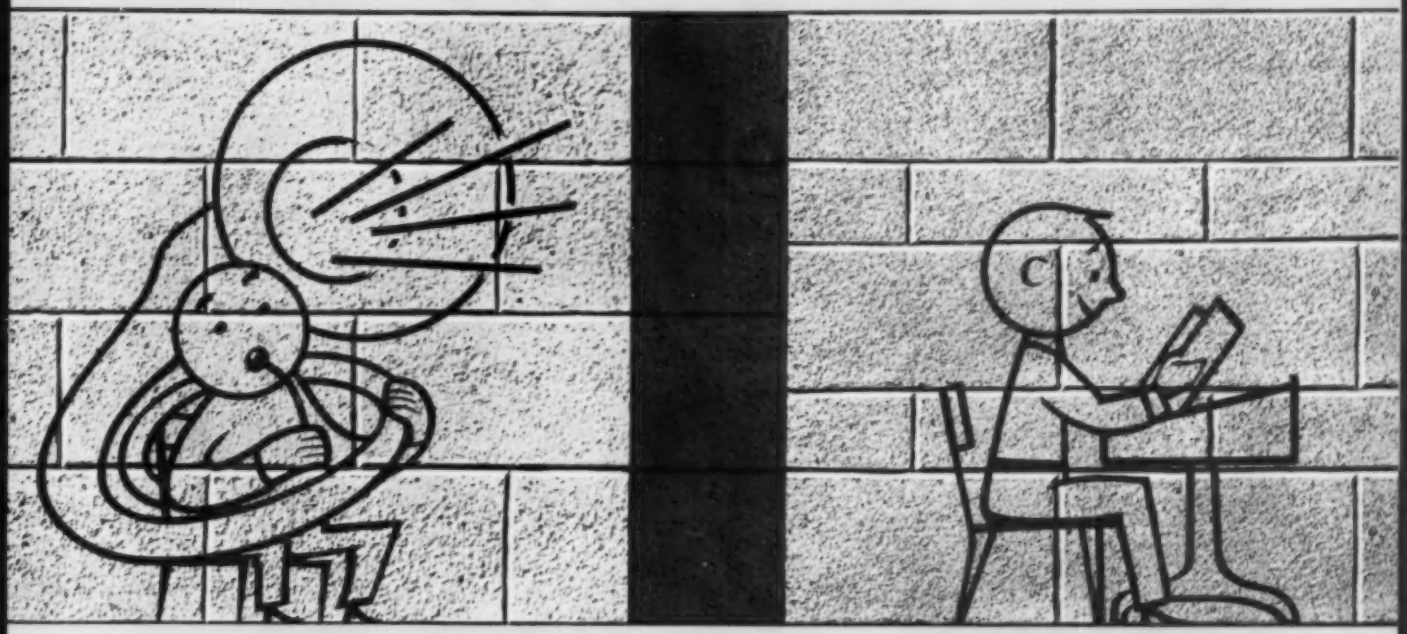
And the band played on...



thanks to sound-absorbing Concrete Masonry

EXPOSED Concrete Masonry interior walls are a sure cure for the sound problems in schools. Unpainted block will absorb up to 68% of noise in classrooms and corridors. This means a quieter, more productive school building.

When you're planning a school building or addition, remember these important extras: Concrete Masonry keeps down noise—provides insulation—is fire-resistant and attractive for interiors and exteriors—requires no expensive wall finishing—practically no maintenance.

But the biggest plus of all is the lowest in-the-wall cost of any building material.

Call your local block producer for the whole story about Concrete Masonry. He is a member of NCMA and a good man to know.

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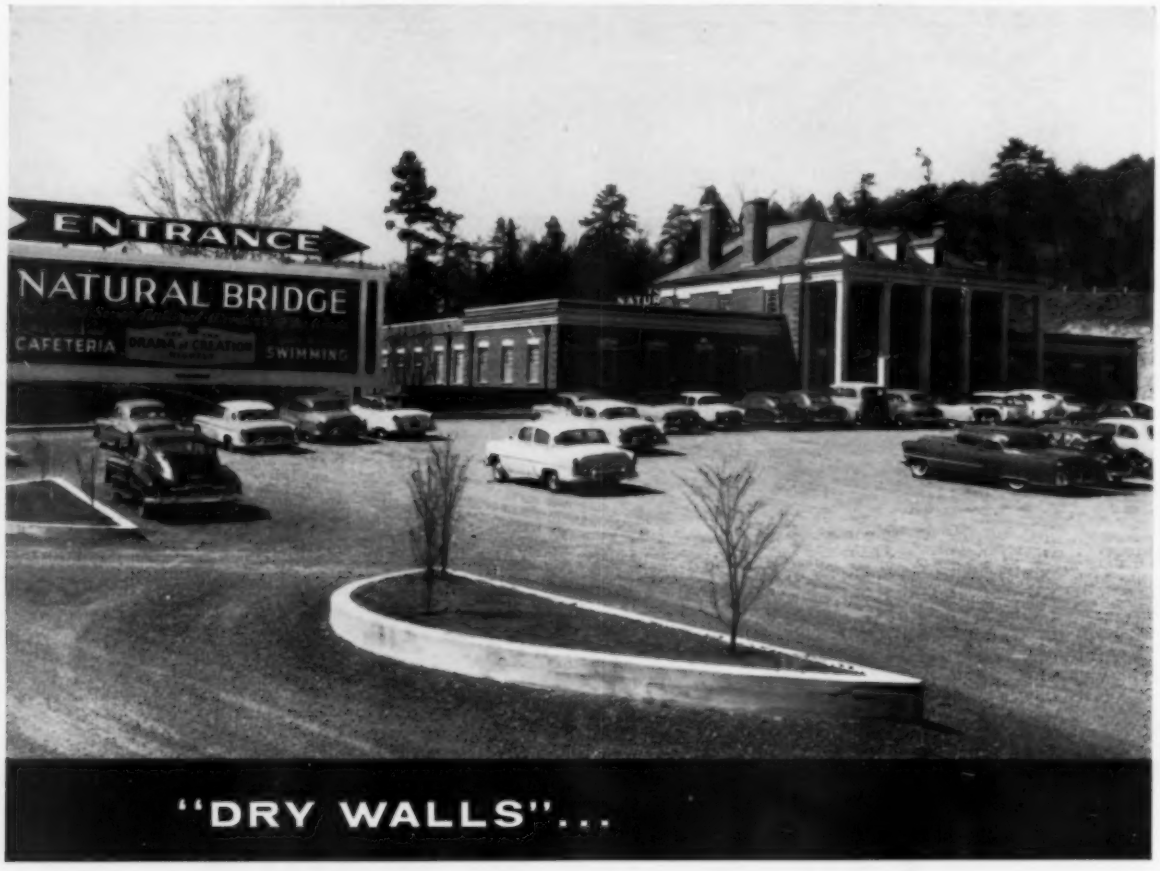
Rockbridge Center—the new million dollar entrance to Natural Bridge. Lehigh Mortar Cement was used for all masonry including concrete blocks and glazed tile for walls of swimming pool enclosure and game room.

Architect & Engineer: WILEY & WILSON, Lynchburg, Va.
Contractor: FRED B. FUQUA, Lynchburg, Va.
Dealer: CITIZENS COAL & SUPPLY CO., Natural Bridge, Va.



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Architects and owners plan for dry walls. Contractors take pride in building them. That's why Fred B. Fuqua used Lehigh Mortar Cement in the several jobs he built for Natural Bridge of Virginia, Inc. during the past eight years.

"On all of these jobs," writes Mr. Fuqua, "the mortar is in good condition . . . all have *dry walls*."

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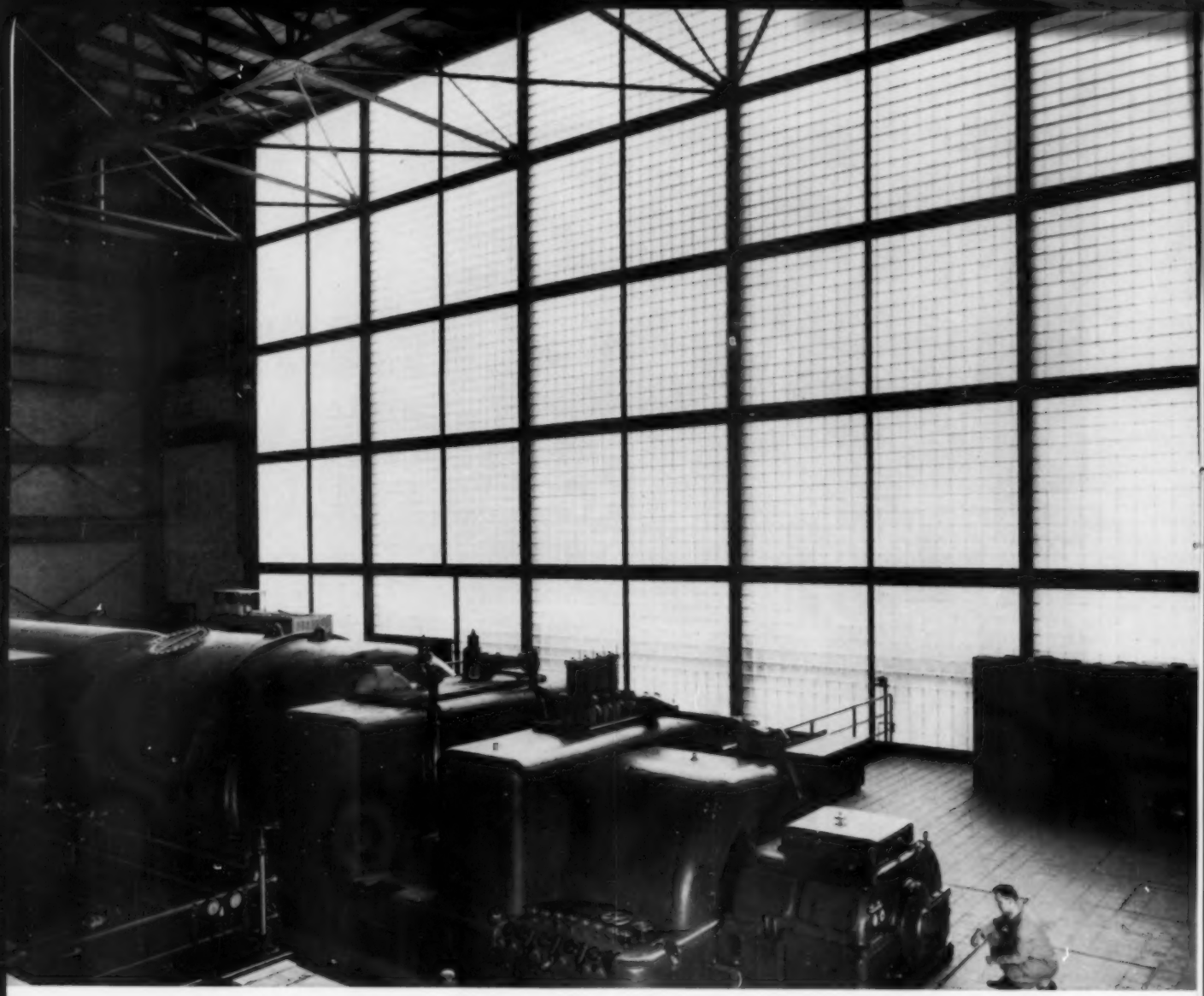

Major wall areas of Glass Blocks provide maintenance-free daylight

When the designers of Philadelphia Electric Company's Cromby Station considered plans that called for a quarter acre of daylighting, they immediately recognized the need for minimizing maintenance. With such a vast area, sash repair, window cleaning, storm damage, painting, or any other type of maintenance could present major cost items.

They found the answer in PC Glass Blocks. Installed in giant panels on the north and south elevations, the 12-inch *light-diffusing* glass blocks provided other benefits, too. Daylight is glare-free. Excessive heat gain, which could hamper operations, is controlled. And the bold use of the blocks creates an attractive and modern exterior.

For product information, write or see us in Sweet's. Pittsburgh Corning Corporation, Dept. AC-76, One Gateway Center, Pittsburgh 22, Pa. In Canada: 57 Bloor Street West, Toronto, Ontario.

Philadelphia Electric Company's new 350,000 kw Cromby Station, Cromby, Pa.

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Philadelphia, Pa.

Engineering and Design:
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permits shallower footings, lighter columns

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Tri-Rib Roof Deck is made of Cop-R-Loy Steel for long, dependable life. Qualifies for fire resistance rating as specified by leading insurance companies.

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Designed in accordance with specifications adopted by A.I.S.I. for light gauge structures, dated January, 1949.

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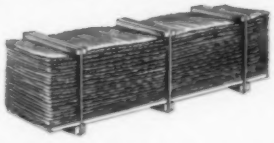
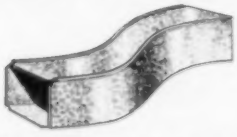
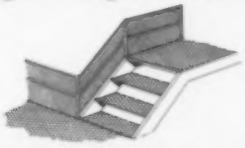


Metal Lath—Combines packaging economy with the best plaster bond for crack-free walls, complete design flexibility.



SOFTITE Cop-R-Loy: the tightest-coated Galvanized Sheet. Coating won't peel no matter how severely formed.



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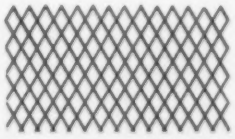

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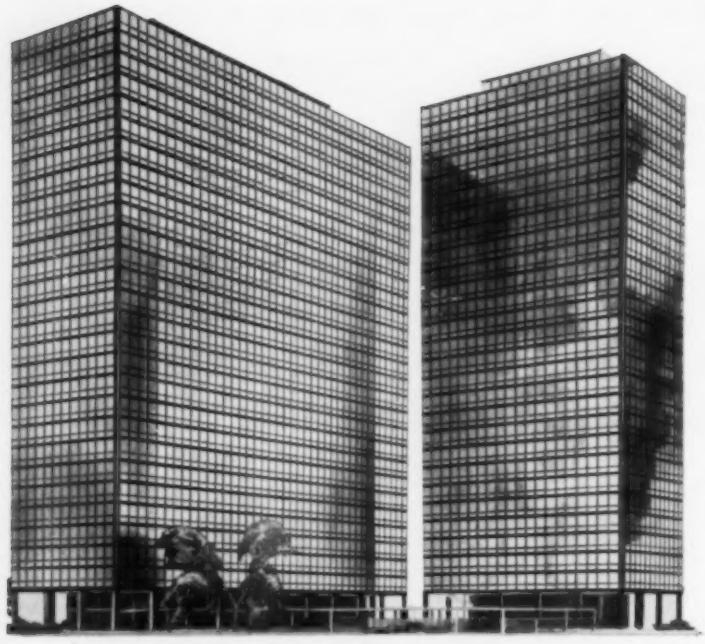

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FLOOR GUIDE

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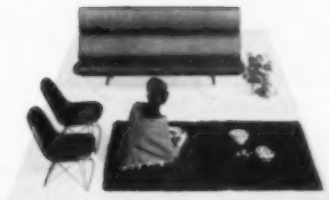
MUSEUMS...THEATER LOBBIES...LOUNGES....



A COLLEGE RECREATION AREA...

A COMMUNITY CENTER...

OR DEPARTMENT STORES...RESTAURANT FOYERS..

AN AIRLINE TERMINAL..

(THE HOME, OF COURSE)

BANKS...HOSPITALS... A LARGE OFFICE BUILDING...

ANYWHERE, IN FACT, WHERE ULTIMATE SERVICE, BUDGET AND DELIGHT ARE DECISIVE CONSIDERATIONS.

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FOR SUMMER COMFORT,

the U. S. National Bureau of Standards rates multiple layers of aluminum FIRST

among all insulations it tested, as reported in its booklet, "Effect of Ceiling Insulation upon Summer Comfort," BMS52. (You can get it at our expense.)

To be comfortable in summer you must ward off unwanted heat rays or radiation. Most heat flow thru a *roof space* in summer is by radiation. There is no convection down, and little conduction thru low density air.

Temperatures can reach over 140° F. in some attics. With an absorptivity for heat rays of only 3%, reflectivity 97%, and emissivity 3%, scientific multiple aluminum is an effective shield against summer heat. The slight mass of its components, air being preponderant, makes it very low in heat storage.

COST OF AIR-CONDITIONING REDUCED

This shield against radiant heat lifts part of the load from house-cooling equipment, reducing installation and up-keep costs. But the building which is *not* artificially cooled, needs this shield even more!

Multiple aluminum is also markedly effective against radiation through a *wall space.*

Air of higher outside temperatures will support more vapor than the cooler air inside a building. Often vapor flows from the outside to the inside of the house, obedient to the law of physics that vapor travels from areas of greater density to areas of less vapor density.

Multiple aluminum has long, continuous metallic sheets on *both* sides which are almost impervious to water vapor. Infiltration under the flat, stapled flanges is slight. The scientific construction of multiple layers of aluminum, fiber and air spaces, minimizes condensation formation on or within this type of insulation. Timber rot, crumbling plaster, peeling paint, etc. are minimized.

CAUTION: *We do not recommend placing vapor barriers on both sides of all insulations.*

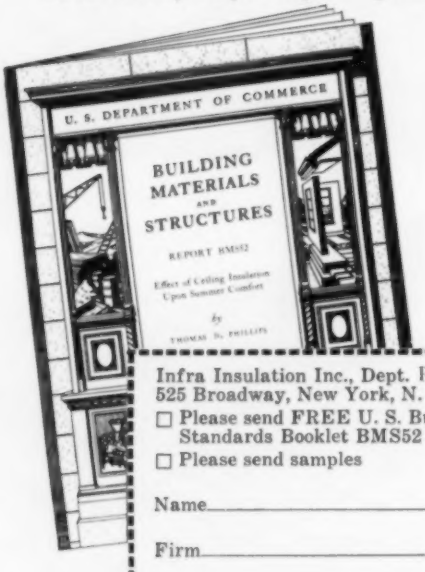
IN WINTER, NEED FOR INFRA EVEN GREATER

The low conductivity, the slight heat ray absorptivity and emissivity of scientific multiple aluminum, and the retarding of inner and outer convection by the multiple layers of metal and fiber, amazingly effective in summer, assume paramount importance in winter when this 3-fold bar to outward heat flow cuts fuel bills and increases comfort.

To obtain MAXIMUM, **uniform-depth** protection against heat loss and condensation formation, it is necessary to use the new **edge-to-edge** multiple aluminum*, **each** sheet of which stretches from joist to joist.

*Patent applied for

INFRA INSULATIONS CAN BE PURCHASED everywhere through your preferred local dealer for 3¢ to 12¢ per sq. ft. depending on the type.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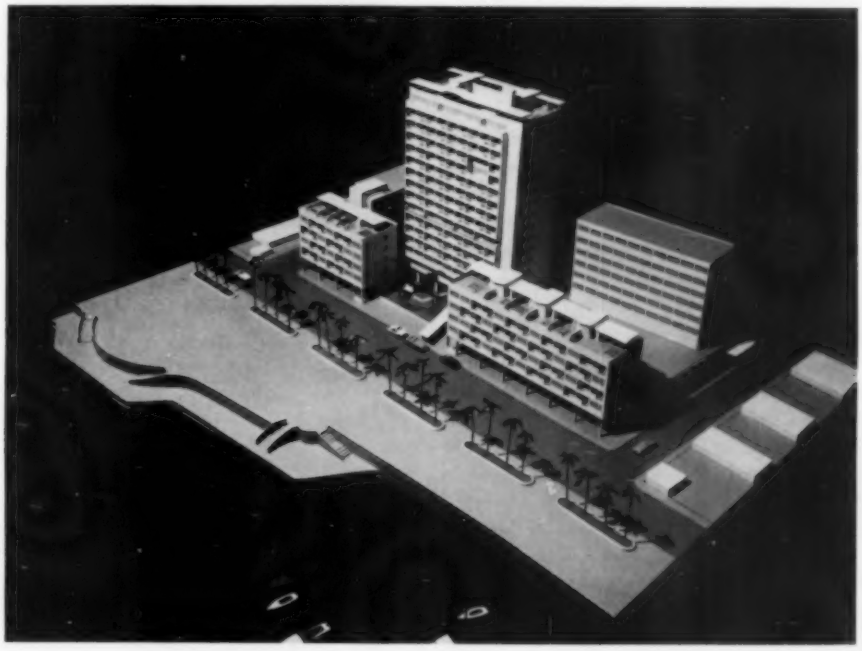
NEW CLUSTER CHANGES MONACO SKYLINE

Monaco has been much in the news in recent months. And now, in addition to having acquired a new Princess from Philadelphia and the rumor of a forthcoming heir to the Principality, the picturesque community also boasts an impressive new residential and civic center that dominates the Mediterranean shoreline along Boulevard *Albert Primier*. French Architects for the project were J. Ginsberg and G. Massé, with Ilinski collaborating.

On the model below (*left to right*) are living quarters for police, with police officers and jail block behind; a 14-story luxury apartment house; a 4-story unit consisting of studio apartments (*foreground*) and a 6-story administrative building for the Principality. Joining the (latter) two is a parking garage. All buildings except the jail are completed. Covered galleries adjoin retail shops at street level, and landscaped walks and gardens penetrate the heart of the site.



Photos: Duprat

News Bulletins

• XXIII International Congress for Housing and Town Planning—on "The City and Its Surroundings"—is scheduled in Vienna, Austria, July 22-28, 1956. International town planning exhibition and awarding of prizes for best films on housing or town planning will also be featured in conjunction with Congress. Address applications to Hauptschriftleitung Der Aufbau, Wien I., Neues Rathaus, Stadtbauamsdirektion. . . . Walter F. Bogner, of Cambridge, Mass., will attend Congress as official AIA representative.

• Charles W. Attwood Research Fellowships in Architecture —two $3500 awards for research projects at University of Michigan—are available for 1956-57. For information, contact: Dean, College of Architecture and Design, University of Michigan, Ann Arbor, Mich., before Aug. 15, 1956.

• Buford L. Pickens has resigned from post of Dean at Washington University's School of Architecture, to accept new position as architectural planner and adviser for university's Second Century Development Program. Joseph R. Passonneau, Design Critic in Architecture and former Chief of Design for TVA, has been appointed Acting Dean, effective July 1. . . . Joseph F. Morbito has been named Professor of Architecture and Head of new Department of Architecture at Kent State University, Kent, Ohio. . . . Paul M. Heffernan has been selected to succeed retiring Director Harold Bush-Brown at School of Architecture, Georgia Institute of Technology.

• Seminar on Parish Planning—for Architects and Priests—will be held at University of Notre Dame, July 13-15. Speakers—including Rev. Ernst Grieshaber of Karlsruhe-Knielingen, Germany, and Thomas H. Locraft, of Catholic University of America—will discuss building facilities for spiritual activities as well as integration of the arts in church buildings.

• Several U. S. Government awards for visiting lecturers or research scholars in architecture and planning are available for Denmark, Finland, Germany, and Greece. Applications for academic year 1957-58 are due Oct. 1, 1956. For applications and information write: Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Ave., Washington 25, D. C.

• Honors in architecture and the arts were recently announced by The American Academy of Arts and Letters and The National Institute of Arts and Letters. John Yeon, Architect, Portland, Ore., received $1000 Arnold W. Brunner Memorial Prize in Architecture; Gold Medal of the Institute was awarded to Sculptor Ivan Mestrovic; $1000 grant in literature went to Henry-Russell Hitchcock. Lewis Mumford was named to membership in the Academy—which limits its number to 50.

• American Institute of Planners has presented its Annual Distinguished Service Award to Charles B. Bennett, Director of Planning for Pereira & Luckman. . . . James H. Grady, Professor of Architecture at Georgia Tech., has been elected to membership in Royal Society of Arts, Great Britain. . . . Richard M. Bennett, Chicago, has been named to succeed Ralph Walker on State Department's advisory committee on foreign buildings.

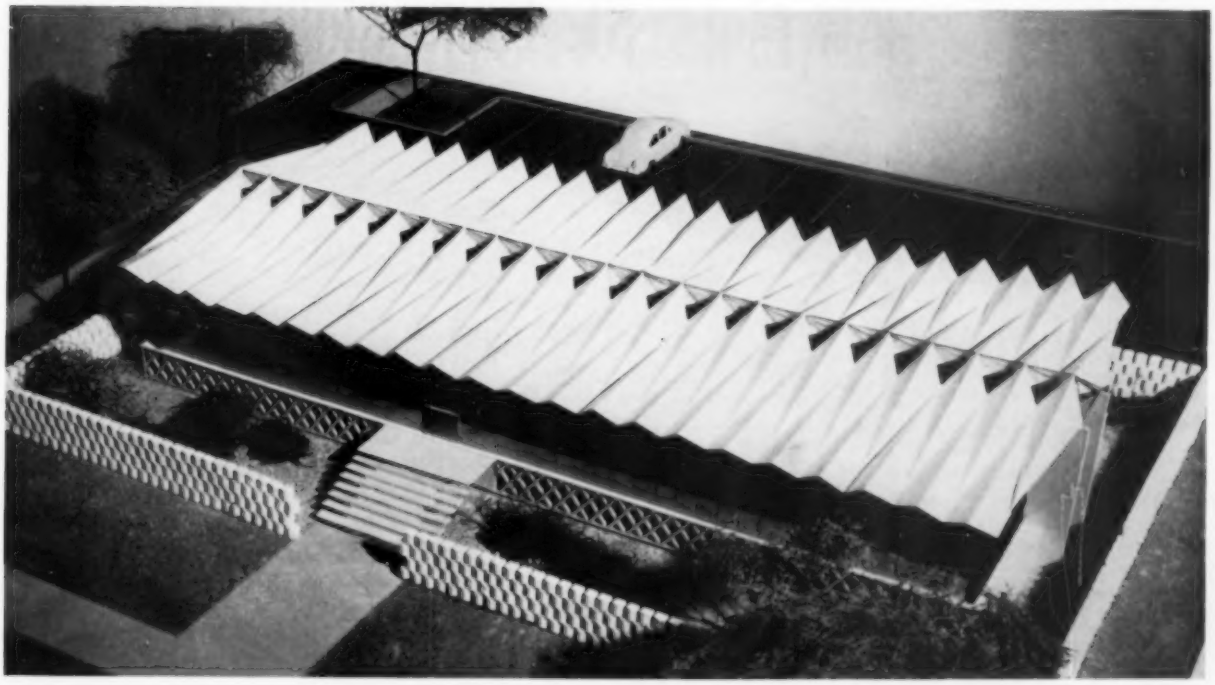
• South Carolina Chapter, AIA, has established Clemson Architectural Foundation, to assist Department of Architecture at Clemson College. Foundation will seek to improve basic architectural training and develop research into construction materials and methods particularly suited to that region.

• The Japanese House (below)—which attracted more than 223,000 visitors during its two-year stay at New York's Museum of Moden Art—will soon be dismantled for removal to a permanent site in Philadelphia's Fairmount Park. The house, presented to the Museum by America-Japan Society of Tokyo and private citizens of Japan and the U. S., was built to illustrate the relevance of classic Japanese architecture to problems of contemporary Western architecture.

Ezra Stoller

New Japanese gardens will be designed especially for Lansdown Road site in Philadelphia by Junzo Yoshimura, Architect of the house; Japanese gardens and pools at the Museum will be retained as setting for outdoor sculpture.

• Professional photographers are invited to enter Second Exhibition of Architectural Photography, sponsored by AIA to give recognition for outstanding work in architectural photography and to demonstrate its value to the architectural profession. Entries for exhibition—to be held in Gallery of the AIA in early 1957—must be received by Oct. 16. For exhibition regulations and applications, write Mrs. Alice G. Korff, Curator of Gallery, AIA, 1735 New York Ave., N.W., Washington 6, D.C.

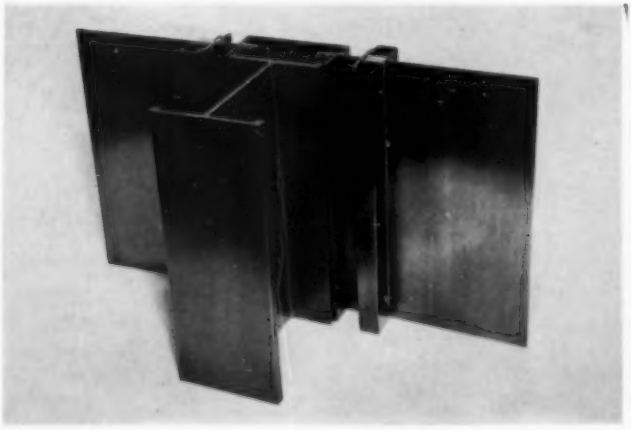


• New headquarters for American Concrete Institute (above) —designed by Minoru Yamasaki—will be a showcase for products and technological accomplishments of the concrete industry. Folded-plate, reinforced-concrete roof system is cantilevered at front and rear from concrete interior-corridor walls to project over façade of precast-concrete panels, glass, and colored-concrete pipe sections; triangular skylights will provide natural lighting for central corridor. Construction on $275,000 structure in Detroit's northwest residential area will begin in early 1957.

• Winning designs in Third New England Architectural Competition— for buildings erected in New England during past five years—were exhibited at recent Boston Arts Festival. Grand Architectural Award was presented to Eero Saarinen & Associates and Anderson, Beckwith & Haible, Associated Architects, for new MIT Chapel. Special Commendation was given to Coletti Brothers, Boston, as Architects for Beach Pavilion, Salisbury, Mass.; Commendation went to The Architects Collaborative, for Northeast Elementary School, Waltham, Mass.

• Several U. S. Architects have been awarded recognition from outside the architectural profession at recent commencement exercises. William Caudill received Honorary L.I.D. Degree from Michigan State Normal College. . . . Marvin Pierce Halverson and Harold T. Spitznagel were awarded Honorary L.I.D. Degrees at Augustana College, Sioux Falls, S. Dak. . . . Honorary L.I.D. Degree was conferred on Mies van der Rohe by North Carolina State College. . . . L. Morgan Yost was named a "Distinguished Alumnus" by College of Engineering of The Ohio State University.

• Design of Seagram House (below), first skyscraper in New York City to use plate glass from floor to ceiling and first to have an architectural-bronze curtain wall, has necessitated new standards of color matching, dimensional tolerances, and extrusion sizes in the bronze industry. Specially designed mullion system (left), to be fabricated by General Bronze Corporation, has I-shaped extruded-bronze mullions projecting from façade to support windows and spandrels and to guide mobile window-cleaning equipment; attachment of windows and plate-bronze spandrels allows ample expansion or contraction within each 4'-7" bay. Architects for 38-story office tower are: Mies van der Rohe and Philip Johnson; Kahn & Jacobs, Associated.



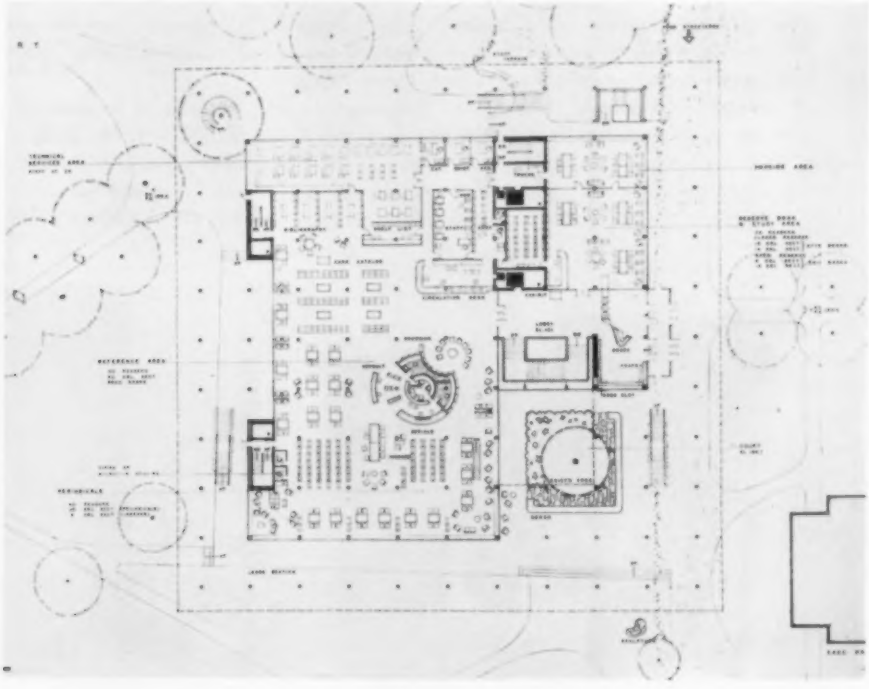
ST. LOUIS ARCHITECTS WIN

St. Louis Architects Murphy & Mackey, one of six distinguished architectural firms invited to participate in this recent design competition, were chosen as Architects for Washington University's new John M. Olin library. The Jury was composed of Dean William W. Wurster of University of California School of Architecture; Charles David, former director of libraries at University of Pennsylvania; Henry R. Shepley, member of the Boston firm of Shepley, Bulfinch, Richardson & Abbott. Buford Pickens, Dean of Washington University's School of Architecture was Professional Advisor. Library requirements were determined by a special faculty committee in consultation with Andrew Eaton, Director of the Washington libraries, and Keyes Metcalf, former director of the Harvard libraries. The winning design (*above*) is a five-story building of rectangular plan, in which reading rooms will be distributed on all floors. For convenience of access to library facilities and for reduction of building height, two stack levels are below ground, two above the central ground floor. In keeping with surrounding campus buildings, the floors above the ground level will be of pink Missouri granite. Glass and masonry are horizontally separated by a 22-ft-wide continuous gallery, which will serve as promenade deck on the upper floor and provide cover for an arcade at the ground level (*below*). A landscaped court within the building will be the focal point seen from the main stair hall. Deliveries to the library will be made through a tun-

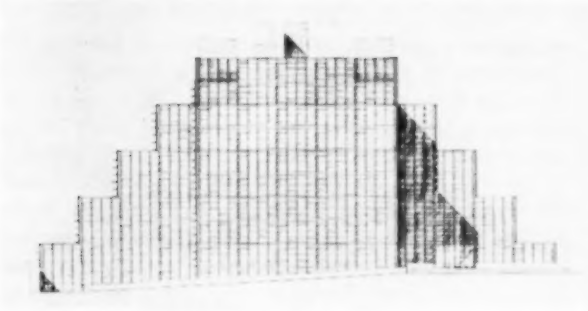
Eugene J. Mackey

Herb Weitman

Joseph D. Murphy



WASHINGTON UNIVERSITY COMPETITION



Five-story glass building (right) *was entry of Jamieson, Spearl, Hammond & Grolock.*

Circular library (below), *by Caudill, Rowlett, Scott & Associates, uses copper and glass on exterior.*

Design by Kahn (left) *is a concrete structure. "Future expansion" is accomplished "by adding vertically to stepped wings any required number of one-story units with 17'-4" bays."*

nel from the service road on the north side of the campus. The building will contain approximately two million cubic feet, affording space for 900,000 books, and providing reading facilities for 1200 students and 75 faculty members. Other design contestants were: Caudill, Rowlett, Scott & Associates, Bryan, Tex.; Louis I. Kahn, Philadelphia, Pa.; Edward D. Stone, New York, N. Y.; Hellmuth, Obata & Kassabaum, Inc., St. Louis Mo.; and Jamieson, Spearl, Hammond & Grolock, St. Louis, Mo.

Design by Hellmuth, Obata & Kassabaum, Inc. (above) *was to harmonize with existing buildings through use of pink granite for exterior walls and conformity in building height.*

Stone's entry (left) *was a rectangular building with a central, multistoried hall and a sunken garden.*

Washington Report

by Frederick Gutheim

Opposition to Federal dispersal policies in the national capital area has been inevitable from downtown interests, if slow in materializing. Last month, two powerful groups—the Washington Board of Trade and the District Bankers Association — announced they would formally oppose the policy of the National Security Council to reduce the vulnerability of the capital by dispersing many Federal agencies to a zone 20 to 30 miles from the center of Washington. Most recent is a proposal to build a $31-millions project near Washington for Weather Bureau/Coast and Geodetic Survey. Moreover, every month has brought news of massive suburban developments here, as in all major large cities. Measured in houses, stores, industries, utilities, or any other type of building, it is clear that the area outside the Federal city is growing ten times as rapidly as the central district. This development is taking place without regard to dispersal—and is unlikely to be affected by it. Steps toward regional government might usefully be taken, if dispersal is to have a better-planned context. Anyone trying to stop the spreading-out movements, whether spontaneous or in response to security concepts, is a bit like King Canute. The belated appearance of these representative central-city forces, however, will be a healthy move in forcing the Federal Government once again to define the Federal interest in its capital—a job that has to be done at least once every decade. In addition to the usual questions of the franchise and the Federal share of the cost of local government, we are due to consider dispersal, a metropolitan regional housing and redevelopment agency or one with extra-territorial powers, and some other segregation-liked isssues. If the National Security Council thinks it is going to limit the dispersal question to matters related to the hydrogen bomb, it is due for a rude awakening.

• In addition to the proposed National Auditorium (about which I wrote at length in March 1956 P/A) local interest in a stadium has been kindled by the endorsement President Eisenhower has given this proposal at a recent news conference. A stadium commission was authorized by Congress a dozen or so years ago. While it is still in being—on paper, at least—the Federally established body never produced a concrete proposal. It is redevelopment powers, of course, that are now looked to as the means of realizing such a project. Those powers, too, are the best hope for putting together the powerful interests in the existing commercial stadium (strangled by a lack of adequate parking) and what is desired in the way of a new facility.

• The best bet now is that the strong public-housing sentiment expressed in the Senate can be made to prevail in the House. Not that 135,000 units a year (the Senate figure) or anything like it can or should prevail, but something substantially in excess of the 35,000 annual figure the Administration has asked will emerge from the ultimate conference.

• Less than a year ago, Wallace Harrison, on behalf of the Commission of Fine Arts, appealed to Congress not to allow the destruction of Robert Mills' Old Patent Office building, in recent years the home of the Civil Service Commission. Situated in the commercial district, the use of the site for a parking structure had been agitated. The General Services Administration had concluded it was unsuited for continued use as an office building. An unbelievably constructive solution assuring the preservation of this important Greek Revival monument has been reached by the decision to turn it into a National Portrait Gallery. This fine conception is the work of David Finley, Chairman of the Commission of Fine Arts, and Leonard Carmichael, Secretary of the Smithsonian Institution, with the co-operation of the General Services Administration. It is to be hoped that the House Public Works Committee will speedily endorse this recommendation. The proposed Gallery will involve some conversion of the present building, and will become effective at some time in the indefinite future when the reshuffling of Federal agencies now occupying temporary structures is farther advanced. The Gallery will become a repository for paintings now in the possession of the National Museum, the National Gallery of Fine Arts, and other government agencies, including, I should hope, at least some really fine ones now hanging forgotten in departmental corridors. (While peparing this note I consulted H. M. Pierce Gallagher's biography of Mills and was surprised to learn that because of its irregular site, jutting into F Street, the Patent Office has been menaced from early days by those who wanted to "plant it out"; and that since 1925, at least, it has had to be defended against those who would demolish it.)

While his public service in his capacity of Chairman of the Fine Arts Commission continues, David Finley's retirement as director of the National Gallery of Art ought to be noted. The soft-spoken South Carolinian who guided the destinies of this institution from the time it was a gleam in Andrew W. Mellon's eye, is succeeded by John Walker, who has been on the Gallery staff since 1939.

• On Capitol Hill, the list of building projects grows and grows. The extension of the historic East Front of the Capitol, already authorized by Congress and endowed with a sufficient appropriation to get the work started, will be held up until after the January inauguration ceremonies. In that time a panel of consultants will report. But, meanwhile, plans for a parking structure under the East grounds, a complete landscaping re-do, and new buildings for both houses of Congress (including the provision of a mammoth restaurant in the court of the House Office Building) have been announced. Land is being acquired for additional expansion beyond the new Senate Office Building now under construction. So far, however, there is little to show that this list is more than piecemeal projects being rammed through by J. George Stewart, the politically astute Architect of the Capitol. On the whole, not a promising situation.

Financial News

by William Hurd Hillyer

No longer do we hear the word "booming" applied to current conditions. New York's topsize trust company concedes that business confidence seems to have weakened during the past month; the city's biggest national bank puts optimism on the defensive by admitting that certain adjustments have "cut deep." The trust company reveals that a new cyclical downturn is being discussed as a possibility; the bank sees an over-all pattern of stability, yet finds it necessary to explain that today's soft spots in business are caused by the current shift from an automobile and homebuilding demand to a demand for industrial equipment. These are not the best of tidings for architects, but pessimism wanes as our page progresses.

Both observers agree that the '56 midyear picture differs radically from the analogous scene in '55. Gross national product has assumed a "sideward drift" in contrast with the "pronounced upward tilt" of last year, having risen less than ½ of 1 percent since December. Money was easy last year; today it is tight and may get tighter. Residential nonfarm construction is down a billion dollars from the annual rate at the close of '55, and dwelling starts are 80,000 less for the six months ending March of this year than for last year's like period. On the other hand, capital outlays by business and various public entities continue to expand. Such outlays tend to augment tangible production and thus provide material for renewed prosperity.

• The most acute strain on the construction sector of the nation's economy, as seen by the Federal Reserve Board, is in the costs area. Steel has risen 60 index points since mid-'54; lumber and plumbing equipment, 10 and 15 points respectively; building materials as a whole are up some 16 index points or around 7% since the beginning of 1955; complete building costs, over 10 points. Arresting as these transitory figures are, the problem they pose will soon be dwarfed by the irreversible scarcity of suitable land—a fundamental depletion which carries with it a steady cost-increase for prepared residential sites.

• More heartening is our next array of figures, dealing with the cost factor pertaining to such expansion as covers the type of construction which serves residential areas and makes them livable. According to a current Federal Reserve study, total cost of these auxiliaries is rivaling that of the residences themselves. Deduction of local streets, roads, and utilities from a nationwide $10.6 billions leaves $6.1 billions as a sum pertinent to architecture. This amount consists of $2.7 billions for school and managerial edifices, $1.5 billion for stores, $1.1 billion for hospitals and recreation centers, $700 millions for churches. Architecture's nonresidential domain has been bettered, dollarwise, by over 300% since 1946.

• Bankers are beginning to realize that the nexus between various types of construction is much closer than a few years back. Today's dwelling, whether single or multiple, is surrounded by what might be called a magnetic field of complex community interest. Mortgage lenders, as well as builders, are intrigued by these new population patterns. Though steps are officially contemplated to make homebuilding financially easier, moneyed men feel that this does not go far enough. They favor conventional mortgage funds without Federal guarantee, plus state and municipal long-term credits, as more practicable dollar sources for both the dwelling units and their supporting adjuncts. Happily enough, the volume of "conventionals" is rising and the municipal bond market has regained its appetite. In addition, corporate shares are being used to develop shopping centers: a stock issue for that purpose is announced by a major food chain subsidiary.

• Buyers are preferring larger homes in face of rising costs. A recent survey inspired by Wall Street reveals that postwar family expansion has provoked a demand for more bedrooms, baths, and (history repeats itself) full-sized separate dining rooms. The two-bedroom G.I. house, builders report, is no longer a quick-sale commodity. Representative builders are quoted as discontinuing them entirely in some areas and going in for more spacious and individualized models. Here, again, the preference is for conventional mortgages, devoid of FHA or VA underwriting. This turn of events further enlarges the architect's opportunities.

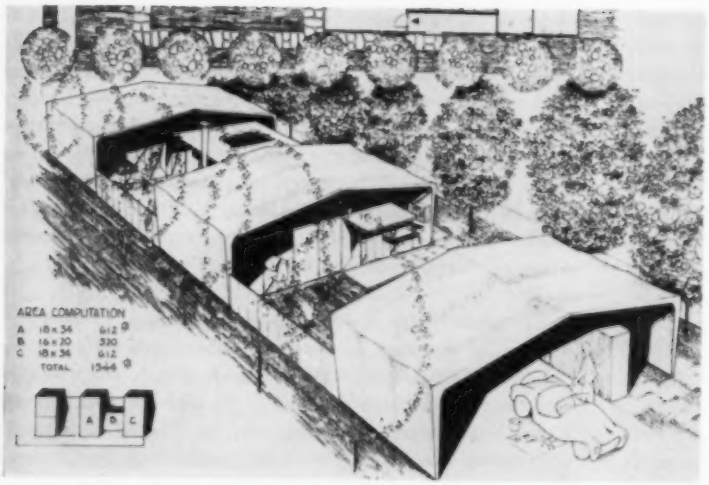
• The pressure for new homes having eased, attention is turning to the vast reservoir of public architectural construction, particularly institutions and schools, accumulated while residential activities was at its highest. Bond issues, earmarked for such purposes, may be floated in fair volume during the July re-investment period, now that Federal Reserve has eased its credit policy. Public nonresidential building will touch an estimated $4 billions in 1956 and total new construction of some $27 billions is expected for the year, exclusive of nonarchitectural items.

• As 1956 swings into its second half, it is preceded by one large question mark: Where's the money coming from? The Securities & Exchange Commission reports that individual savings (the ultimate source) were $3.3 billions less in 1955 than during the previous year, while net private debt shot up $18 billions. A Chicago trust company's prepared graph, however, shows a steep decline in personal spending since Christmas. Savings institutions, according to Federal Reserve figures, report a healthy upturn in deposits of over $1 billion for banks alone. Business, meanwhile, is "moving" along at a quickened pace," to quote the Federal Reserve Bank of Chicago.

• A concluding note (not in a minor key) is supplied by the Department of Commerce, which estimates that $850 millions will be spent on church buildings in 1956—eight times the amount so employed 10 years ago. Some $219 millions went into religious edifices during January-March.

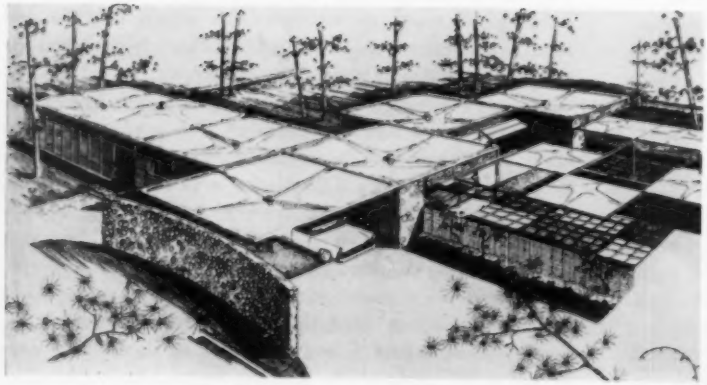
PLASTICS TEST DESIGNERS' TALENTS

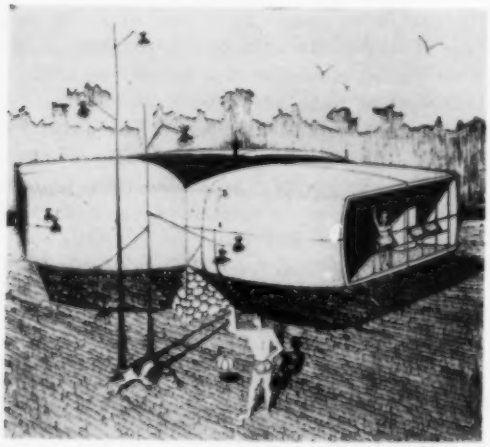
Although a 50-percent increase (over 1954) in plastic wall-tile sales is anticipated by 1960, the prediction is considered valid only if improved design and workmanship are coupled with more effective marketing. Two new examples of improved tile design, making maximum use of plastic's inherent formability and color, were created at the Pratt Institute Industrial Design Laboratory for Monsanto Chemical Company's Plastic Division. Bathroom (*above left*) was designed by Alexander Cranstoun; living room (*above*) is the work of Donald Tripp—both June graduates.



Thirteen prizewinners in the Plastic House Competition, Sponsored by the Society of the Plastics Industry, Inc., were announced in conjunction with the 7th National Plastics Exposition staged in New York last month. Winners were named in categories ranging from overall design for small homes not more than 1600 sq ft in area, to designs for special living spaces, such as bathrooms, playrooms, outdoor living or porch areas.

Grand Prize in "Best Houses" category was won by entry of William Goodwin, Marblehead, Mass. (*center left*); second and third prize entries (*bottom left* and *below, respectively*) were submitted by Hermes & Colucci, Cincinnati, Ohio, and John Dyal, Boston, Mass.





structures in membrane on co-acting ribs

by Paul Chelazzi*

After 22 years of practice in China and Southeast Asia, this author recently resumed contacts with the Western professional world. Although greatly impressed by many of the developments that he saw upon his return, he felt at the same time that some of the structures in the contemporary scene conveyed the impression of seeking stability in a vacuum—as if these structures could be sustained in their mechanical labor by some uncanny means.

He must concur that imagination is still, and unquestionably always will be, an impelling force in structural studies leading toward progressive architecture. At the same time, however, he firmly believes that imaginative thinking can only create geometrical, decorative figments unless the structures imagined are primarily conceived as physical means for supporting loads that are governed in their behavior by the laws of statics and elasticity which cannot be fancifully reinterpreted—even though they are susceptible of being applied in novel but equally valid approaches other than the conventional. The approach which he subscribes to is based on the philosophy that architectural expression can only be found in mechanically efficient, constructionally healthy structures.

In exploring structural studies, mathematics is a precious tool. This author believes, however, that any architect could grasp the essentials in mechanics for preliminary structural design, if he would study the three equations of statics not as formulas, but rather as they express the real phenomena of the physical world surrounding us. After observing the ingenious structures fabricated by Chinese and Japanese farmers, he also believes that a sense of statics may be developed intuitively—even by our own sidewalk superintendents, if a keen interest in construction is guided by but a secondary-school education.

With this brief background, let us consider imaginative structural thinking for the analysis of structures in membrane on co-acting ribs.

*Engineer-Architect, Member of American Society of Civil Engineers, New York, N. Y.

background analysis

A roughly cut stone lintel supported as shown (*Figure 1a*) develops the same resistance whether in compression or in tension. Eight equally spaced loads **P** carried by the lintel obviously produce reactions **R** at supports which are equal to **4P**.

Let us observe the effect of these loads and reactions with respect to the mid-span section **A-A**, on both sides of which the effect is similar (but reversed). Reactions **R** develop moments $\mathbf{M_r}$ tending to bend the beam upward while gravity loads **P** cause moments $\mathbf{M_p}$ in the opposite direction. The difference between these two moments, $\mathbf{M_r}$—$\mathbf{M_p}$, is moment **M** stressing the material fibers crossing section **A-A** (*Figure 1b*). Intuitively we can visualize that in responding to moment **M** (*Figure 1a*) an upper zone of the lintel develops resisting forces to compression which may be represented by their resultant **C**, while a lower zone of the lintel produces an equal amount of tension represented by its resultant **T**. In developing these resistances, **C** and **T**, the top fibers will naturally be the most compressed and maximum tension will occur in the bottom fibers (*Figure 1b*). In such a reversal of stressing, there should be a layer (neutral surface) between the top and bottom where fibers are not stressed at all. All fibers in the section, however, could contribute full resistance up to their maximum allowable stress. Actually, only the top and bottom fibers do so while the remaining fibers have to work less and less as the layer of fibers is located closer to the neutral surface. Evidently, the result is that only one half of the potential resistance in the material of the lintel section can be utilized.

On the other hand, the resisting capacity of the lintel is not produced by the internal forces **C** and **T** alone, but rather by a moment of which they are only one component factor—the other being the distance separating them, namely the arm of resistance (*Figure 1c*).

In a rectangular section, which has been the traditional shape of beams up until the last century (*Figure 2*), the

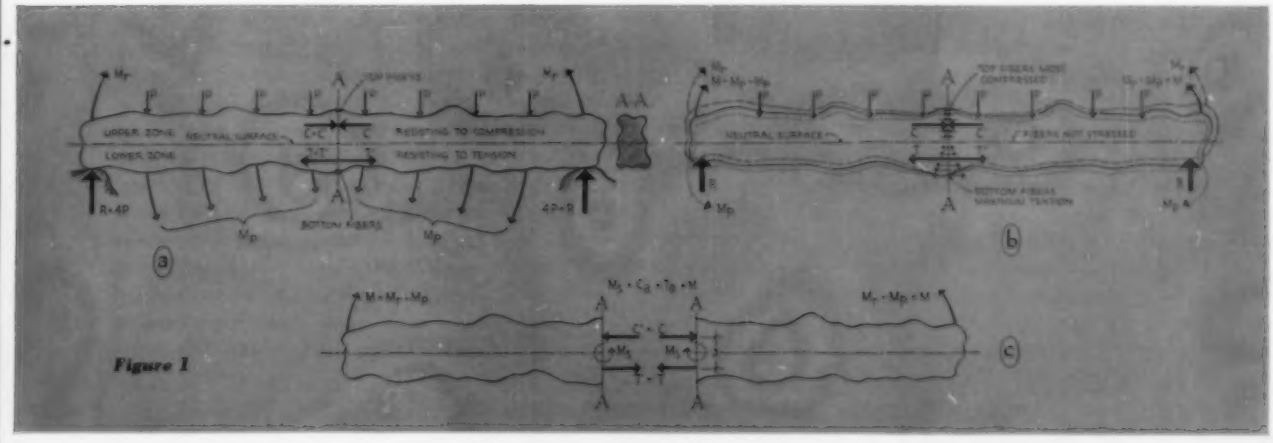


Figure 1

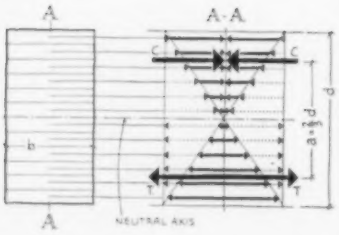


Figure 2—homogeneous-material section

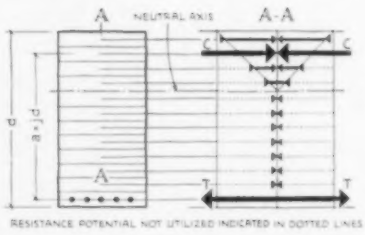


Figure 3—reinforced-concrete section

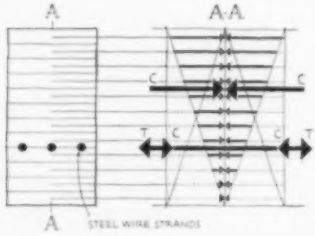


Figure 4—prestressed-concrete section

arm of resistance cannot extend beyond two-thirds of the beam depth **d**.

The preceding limitations of the resistance of internally co-active homogeneous-material beams was intuitively understood by Galileo, but apparently no further advance was made until reinforced concrete was discovered. Possibly because of its competitive price in most building markets, the efficiency of reinforced-concrete sections was not questioned until recently—following developments in prestressed concrete.

As used in beams, reinforced concrete is fundamentally not a homogenous material. This is because concrete has practically no resistance to tension. Thus, in such a beam, only the upper portion of the concrete is used for stress-carrying purposes. The lower part of the beam simply encases the reinforcing steel.

In a typical reinforced-concrete rectangular section (*Figure 3*), utilization of potential resistance to compression in the concrete may be as low as 11½ percent, but not over 27½ percent of the total in the section—depending on the combination of maximum working stresses assumed for concrete and steel. The use of prestressing techniques brings concrete for beams back into the class of the homogenous material mentioned above. Thus, in a prestressed beam, one half of the potential resistance of the concrete is utilized (*Figure 4*). Full or 100-percent utilization of resistance potential is possible only when the section is axially stressed (*Figure 5*). This simple but basically important mechanical fact was first and intuitively realized by Palladio over four centuries ago. He is generally credited with the invention of the truss or rather with the "scientific use of the truss element, the rigid triangle."[1] But rather than thinking only of triangles, his keen sense of mechanics led him to the concept of separating the compressed zone of a rectangular timber beam from the one in tension and connecting them again by means of an open-web system, thereby restoring the co-action between the separated sections (*Figure 6*). Thus he provided far larger arms than the ones limited by a rectangular-shaped beam while utilizing the full resistance potential of the two half sections which he rendered axially stressed. Regarding the extra material and labor required for the web work, he undoubtedly considered that the additional loading capacity provided by extending the arm would amply compensate for it.

Concerning this rather personal and free interpretation of Palladio's possible concepts of design, the author feels justified in thinking that it is not the more or less elaborate geometrical pattern of web work which provides for the truss-loading capacity, but rather its capacity is essentially due to the resisting forces in the sections of the axially stressed chords and equally on the truss panel depth. The web system does not directly contribute any work in resisting the effect of the loading, but becomes indirectly stressed while performing its basic function of connecting the chords.

It has been stated that web members "take up" shear. This they do, by transfering axial load back and forth to the chords, as they logically should do as they are only connecting members. Later versions of the linear truss have been produced by "stretching" these noted concepts of Palladio.

As timber was replaced by steel and fabricating techniques were perfected, larger and larger panel depths could be attempted, thereby rendering more and more questionable the web system's capacity to connect and adequately maintain the truss in the vertical plane of the external loads. To that end, heavier and heavier web work has to be provided together with rigid cross-bracing methods in order to resist the ever larger secondary stresses which develop due to buckling and lateral bending (*Figure 7*). All this causes one to wonder if span and panel depth of framed linear trusses have not far exceeded the limit of mechanical fitness for this type of structure.

Among the comparatively recent re-elaborations of Palladio's linear truss is the Howe-type truss (*Figure 8*).

In its conventional design an open-web truss system connects chords of the same material. Usually, timber or steel has to be used for all members since, under loading, the lower chord in tension should elongate by just as much as the compressed upper chord is shortened—otherwise stability is impaired.

[1] Johnson, Bryan & Turneaure. *Modern Framed Structures.*

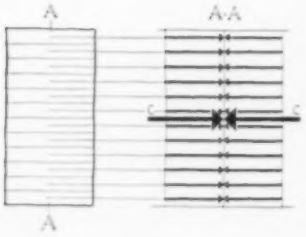


Figure 5—axially stressed section

Should an arch with a rise equal to the above truss' depth support the same loading (*Figure 9*), it would require a sectional area of the same material practically equal to that of *one* of the truss' chords. Furthermore the arch could be shaped so that its axis follows the pressure line of loads and as a result be axially stressed to allow full utilization of the resistance potential in the section. This would be possible, provided that the supports can adequately react to the inclined thrust of the arch T_o at its skewbacks. However, if the arch has to be supported on slender columns (*Figure 10*), a tie rod would be needed to balance horizontal components H_o of arch thrust T_o. For this tie rod, a load capacity equal to that of one truss chord would be required, thus offsetting the advantage offered by the arch within the span—namely, about 50 percent of the sectional area of main structural members and elimination of web work. On the other hand, should the tie-rod (*Figure 11*) hang on a symmetrical funicular like that of the arch while supporting a similar load, it would require practically the same section as that needed to resist passively H_o without carrying any load (*Figure 10*). At the same time the curved tie-rod would provide at the supports an equal horizontal inward component H_o to balance the opposed corresponding H_o of arch thrust T_o. As a result, an hypothetical structure is developed combining an arch and a suspension system which may support twice as much load as that of the tied arch, although requiring practically an equal amount of the same material.

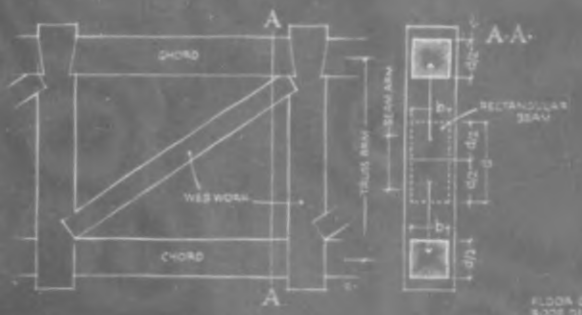


Figure 6—Palladio's linear truss (circa 1550 A.D.)

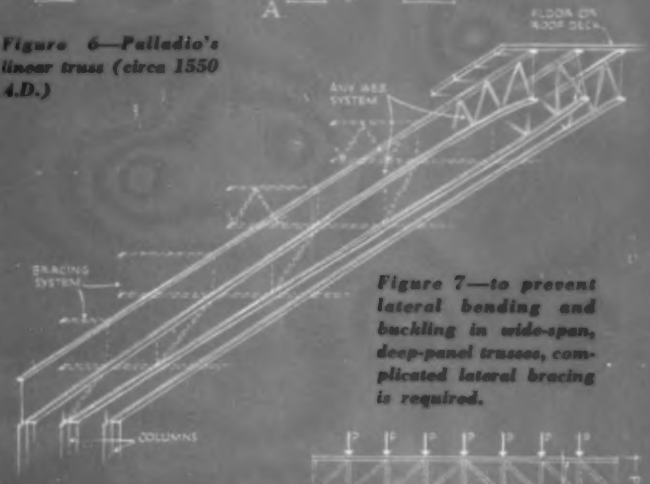


Figure 7—to prevent lateral bending and buckling in wide-span, deep-panel trusses, complicated lateral bracing is required.

Figure 8—Howe-type truss

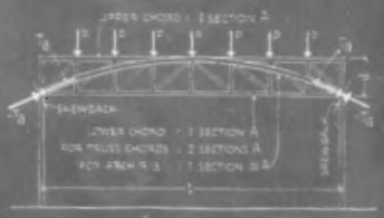


Figure 9—comparison of Howe truss and arch system

Figure 10—tied arch

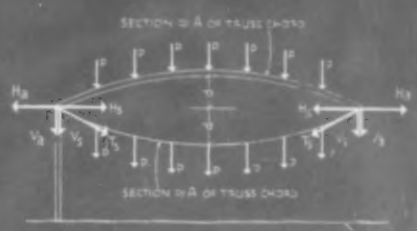
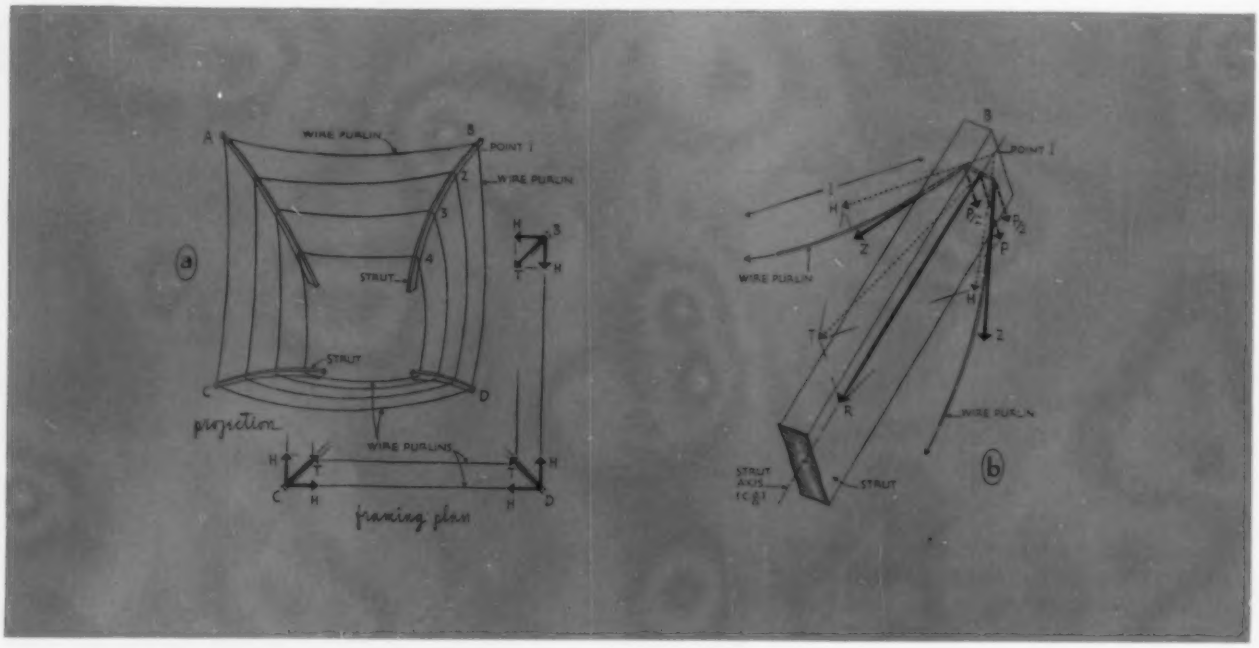


Figure 11—hypothetical "Suspenarch" supporting unit



These concepts of design[2] which the author has called "suspenarch" may also be termed principles of mechanical economy, which may be summarized as:

A. From a mechanical point of view, structures carrying gravity load along the span are more economical when less exposed to the combined action of bending moments, shear, buckling, lateral bending and, in some cases, torsion, which causes an accumulation of stressing. Most economical are those structures in which loading results in axial stressing only.

B. Within certain limits of span, the arch and suspension systems produce maximum mechanical economy insofar as their axes geometrically follow the loads' pressure line which may be a funicular, parabolic, catenary, or other curve corresponding to particular load distribution.

C. In structures of combined arch and suspension systems, conditions set by the first two equations of statics, namely $\Sigma H = O$ and $\Sigma V = O$, may be produced through external mechanical "co-reaction" of component systems on their common hinge at support or joint. Since the main carrying members of said structures are not in themselves subjected to bending moments, the third equation of statics, namely $\Sigma M = O$ obviously does not apply within the individual carrying member itself. The component systems of these structures are not connected within the span by web members which would generate an internal co-action between them. They are designed for free, independent deformation of component systems according to the natural elastic law of the respective material of which they are built.

Preliminary designs based upon the above concepts have been prepared for hangar structures and have proved highly competitive with comparable types of conventional design. They have also been used in studies of the supporting units for reinforced-concrete buildings up to 30 stories high while similar ones have been considered in exploratory studies for a 120-story and a 300-story building.

application

Structures in membrane on co-acting groin ribs express three-dimensionally other aspects of mechanical economy. A clearer understanding of these principles may be had through observing their application in a hypothetical wire-strut structure designed for a roof covering a square plan (*Figure 12a*).

Four struts in diagonal locations support four continuous steel-wire purlins which, under the loading of the roof deck, obviously hang parabolically.

Let us examine the outer wire purlin intersecting and discharging load at point **1** on strut **B** (*Figure 12b*). Due to symmetry, the wire purlin exerts the same pull **Z** on both sides of the strut—**H** being the horizontal components and **P/2** (each being equal to one half of the load **P = wl/2** on the purlin's span) the vertical ones. The resultant of the two horizontal components **H**, is **T**, acting in the same plane in a diagonal direction (*Figures 12a and 12b*) while the two vertical components **P/2** combine at point **1**. This is indicated as a plane for a clearer understanding of the mechanics.

As **T** combines with **P**, a final resultant **R**, which also acts diagonally but downwardly inclined, is produced. Should the strut be similarly inclined as resultant **R**, it would become axially stressed in compression for a distance up to intersection **2**. Thus its resistance potential could be fully utilized as could that of the purlin —which, obviously, is also axially stressed in tension.

The value of tension **Z** in the outer wire purlin, which determines those of all of the other forces in the system, is analyti-

[2] Chelazzi has embodied these principles on several structures, three of which were granted a U. S. Patent in 1941.

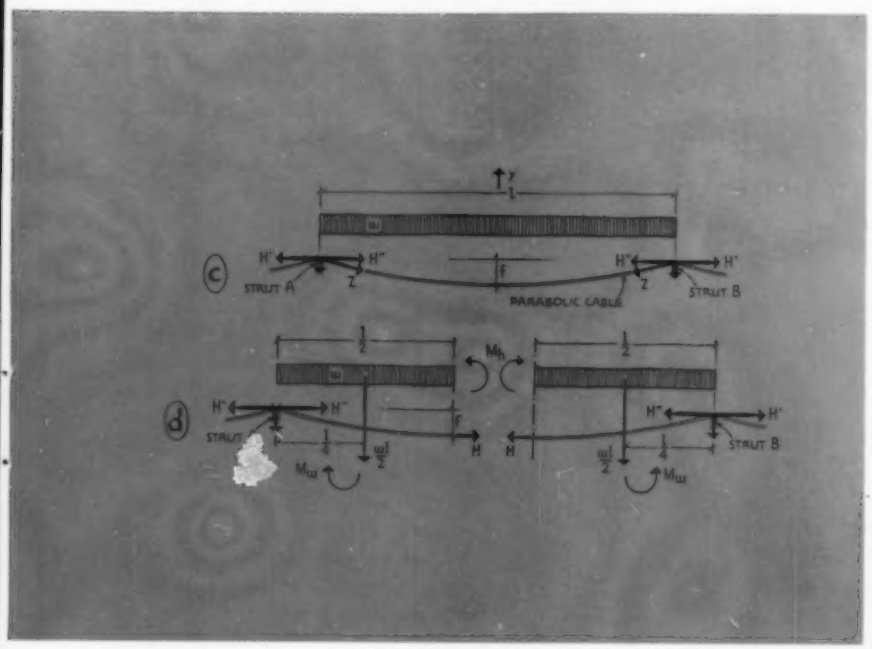


Figure 12—roof framing and wire purlins on struts

cally derived from that of **H**, which is in turn obtained through integrating twice the differential equation of the parabolic cable: $\frac{d^2y}{dx^2} = \frac{w}{H}$, in which **w** = unit linear load of the span.

As architects and engineers in general —including the author and the sidewalk superintendents—do not frequently use that sort of mathematics, let us consider what may possibly be a more realistic evaluation of **H**, in simpler terms of statics, which also gives a clearer picture of mechanical facts involved in the uniform loading of a cable.

If the cable (*Figure 12c*) is cut at midspan (*Figure 12d*), it can be visualized that in order to hold up the load, two equal and opposed pulls **H** have to be applied to both faces of the cut cable. At supports **A** and **B** the inward pulls **H** at midspan produce equal outwardly directed reactions **H′**, which are in turn balanced by the corresponding ones **H″** of the adjoining spans. It follows that the cable is in equilibrium at supports **A** and **B** where, consequently, the sum of moments due to forces acting on the respective half span should equate to zero.

The total load on each half span is **wl/2**, which applied to the load diagram's center of gravity produces the same moment as the distributed uniform loading itself. It will be seen that **wl/2** acting downwardly causes a moment M_w with reference to **A**, which operates in the opposite direction to that of M_h due to the **H** applied on the left face of the cut cable. Thus (*see Figure 12d*):

$M_w = M_h$; namely, $\frac{wl}{2} \times \frac{l}{4} = H \times f$;

hence, $\frac{wl^2}{8} = Hf$; and $H = \frac{wl^2}{8f}$.

For small sag/span ratios, usually assumed in the design of this kind of structure, **H** is practically equal to **Z**. Though they have to work together under loading, compression simultaneously causes an amount of shortening in struts which is independent from elongation in wire purlins due to tension.

In other words, behavior of struts and wire purlins is not conditioned by elastic "co-action" as is required in members of conventional trusses in which the elongation of the lower chord is equal to the shortening of the upper chord and, for that reason, have to be built of the same material.

What actually occurs in these structures is an external, balanced mechanical "co-reaction" between the wire purlins and struts at points on the struts where the two systems are connected. This external co-reaction is governed only by the relative geometrical location of members of component supporting systems, which for all practical purposes may be assumed unaffected by the deformation of the individual members—usually small compared with their size.

This advantage is significant in practical design. For example, it permits the use of concrete struts in conjunction with purlins of steel wire or Manila rope or any other suitable material for supporting load along the span, regardless of the differences in the moduli of elasticity of these materials.

From a mechanical point of view this advantage is also economically significant—particularly in countries where, for example, the unit cost of compression resistance in concrete is considerably lower than that of steel. Hence, a structure designed with concrete struts and steel-cable wire purlins may prove cheaper than an all-steel job. This condition, of course, is dependent upon span limitations. For large spans where the difference between the shortening of arched members and the elongation of cables considerably alters the geometrical shape of the component systems, their balanced co-reaction at the supports may be assured through the provision of prefabrication and erection methods.

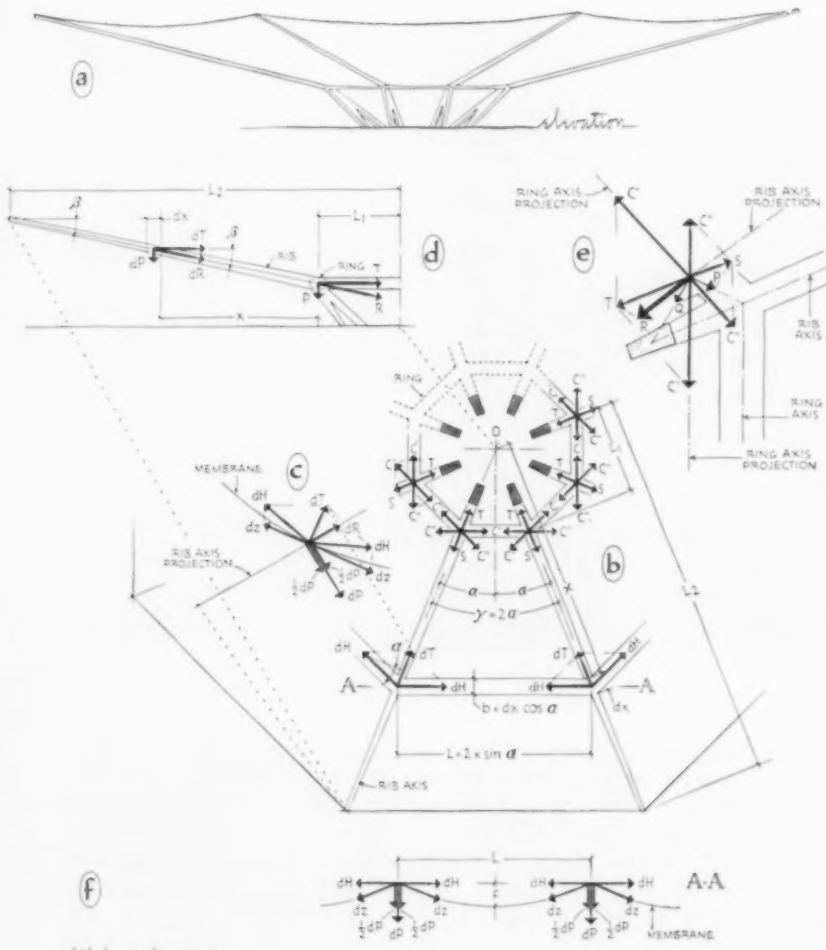


Figure 13—structure in continuous membrane on linear ribs

(1) $b = dx \cos \alpha$

(2) $l = 2x \sin \alpha$

(3) $dH = \frac{w'l^2}{8f}$

(4) $\frac{l}{f} = c = \text{constant}$

(5) $w' = wb = wdx \cos \alpha$

(6) $dH = \frac{w'l}{8} \frac{l}{f}$

(7) $dH = \frac{wdx \cos \alpha}{8} 2x \sin \alpha c = \frac{w}{4} \sin \alpha \cos \alpha c \, xdx$

(8) $dT = 2 dH \sin \alpha$

(9) $dT = 2 \frac{w}{4} \sin \alpha \cos \alpha c \, xdx \sin \alpha = \frac{1}{2} wc \sin^2 \alpha \cos \alpha xdx$ (9a) $dP = 2(\frac{1}{2} w'l) = w'l$

(10) $dP = wdx \cos \alpha \, 2x \sin \alpha = 2w \sin \alpha \cos \alpha \, xdx$

(11) $\tan \beta = \frac{dP}{dT} = \frac{2w \sin \alpha \cos \alpha \, xdx}{\frac{1}{2} w c \sin^2 \alpha \cos \alpha \, xdx} = \frac{4}{c \sin \alpha}$

(12) $dR = dP \div \sin \beta$

(13) $dR = \frac{2w \sin \alpha \cos \alpha}{\sin \beta} xdx$

(14) $\sin \beta = \frac{\tan \beta}{(1 + \tan^2 \beta)^{\frac{1}{2}}}$

(15) $\sin \beta = \frac{4/c \sin \alpha}{(1 + 16/c^2 \sin^2 \alpha)^{\frac{1}{2}}} = \frac{4}{c \sin \alpha (1 + 16/c^2 \sin^2 \alpha)^{\frac{1}{2}}}$

(16) $dR = \frac{1}{2} w c \sin^2 \alpha \cos \alpha (1 + 16/c^2 \sin^2 \alpha)^{\frac{1}{2}} xdx$

(17) $\frac{dR}{dx} = \frac{1}{2} w c \sin^2 \alpha \cos \alpha (1 + 16/c^2 \sin^2 \alpha)^{\frac{1}{2}} x$

(18) $Ro = \int_{o}^{L_1} \frac{1}{2} w c \sin^2 \alpha \cos \alpha (1 + 16/c^2 \sin^2 \alpha)^{\frac{1}{2}} xdx$

Similar concepts have been applied to the design of a structure (*Figure 13a*) in which purlins have been replaced by a roofing membrane and struts replaced by linear groin-ribs continuously co-reacting with the membrane along their contiguous surfaces. Though notations appear on an octagonal plan (*Figure 13b*), the following analysis refers to a generic equilateral-polygon plan.

The mechanical behavior of this structure is basically the same as that explained in presenting the preceding hypothetical one (*Figure 12*), as can be noted in the projection of forces diagram (*Figure 13c*). An equilateral polygon may be defined by the angle its diagonals form at the center **0** (*Figure 13b*), $\gamma = 2\alpha$. Reference is now made to equations (*Figure 13f*). It will be seen that a uniformly loaded parabolic mebrane element with a width (**1**) and a span (**2**) exerts thrusts **dZ** on the rib, of which **dH** are the horizontal components. Should **w'** be the linear unit load along the membrane span, the magnitude of horizontal components **dH** is (**3**). If the same sag/span ratio (**4**) is assumed for all membrane elements, and **w** is the load intensity, we find (**5**). We can write (**3**) as in (**6**). Substituting in the latter (**2**), (**4**), and (**5**), we find (**7**). The resultant **dT** of horizontal components **dH** stressing the rib symmetrically is (**8**). Substituting the value of (**7**) in (**8**), we find (**9**).

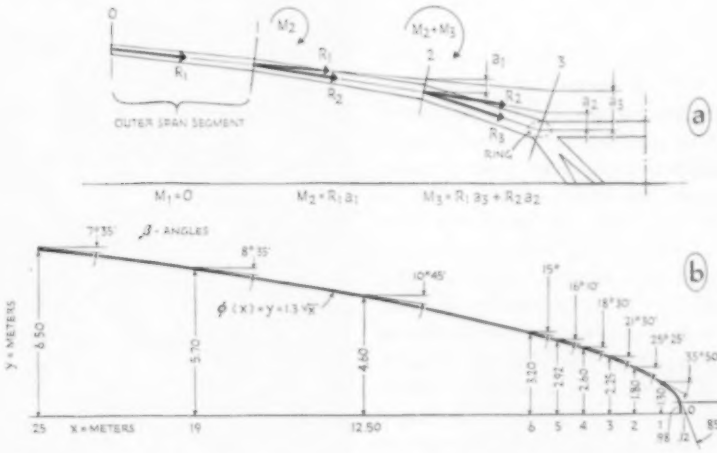
As the load reaction **dP** is (**9a**), if the value of (**2**) and (**5**) are substituted, we would obtain (**10**). The resultant of **dT** and **dP** is **dR** (*Figures 13c and 13d*). In order that all **dR**s due to membrane elements stress the linear rib axially, it should be positioned with an inclination β, the tangent of which is (**11**). The value of **dR** is given by (**12**) and substituting in it the values of (**10**), we find (**13**). Since (**14**), (**11**) may be written (**15**). By substitution of (**15**) in (**13**), we develop (**16**). Hence (**17**). Therefore integral (**18**) gives the value of resultant $\mathbf{R_o}$ at center (**0**). The value of **R** at the intersection with the ring axis is readily obtained by subtracting the value of the same integral between limits **0** and $\mathbf{L_1}$ from the one given by (**18**). **P** and **T** are the components of resultant **R** which stress the ring and strut as indicated in the diagram projection (*Figure 13e*). Due to the inclination of the strut, the gravity load **P** produces a force **S**, the components of

which **C''** reduce axial stressing in the ring **C'** caused by rib thrust **R**.

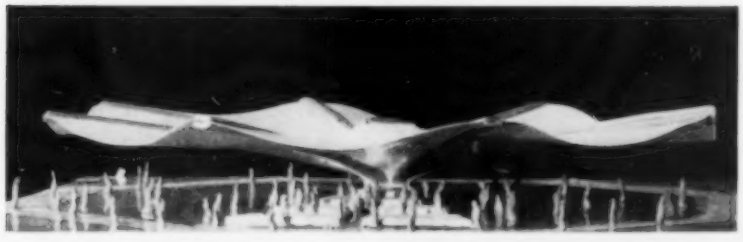
Responding to an architectural impulse, the writer investigated possibilities in curved ribs, and a polygonal one (*Figure 14a*) was first considered. However, it was soon realized that stressing in the rib could only be rendered axial within the outer segment of the span, as bending would occur in adjacent segments.

Intuitively, however, it was felt that through gradual adjustment in the membrane sag/span ratio element, resultants **dR** would be more and more inclined and could possibly form a polygonal line of action suitable for shaping the rib to render it axially stressed in all its sections. At this stage mathematics confirmed that a curved-rib shaped on a continuous function would result in being axially stressed at any point where membrane elements intersect, provided their **sag/span** ratio is equal to the **x**-derivative of the rib-curve function at that point multiplied by $\frac{1}{4}\sin\alpha$ (*Figure 13b*).

But further analysis led to an elliptic integral requiring considerable elaboration on binomial series which would render the approach rather impractical for actual designing purposes.[3] However, the finite differences method (*Figure 14b*) proved much speedier and sufficiently accurate in the preliminary investigations of the first two structures. One of these structures (*Figure 14c*) was designed with a membrane of cement-grouted steel mesh (of the type developed by the Italian Engineer Pier Luigi



Rib span L = 25 meters = 82'; max height = 6.50 meters = 21'3"; w = unit uniform load; $\phi(x) = y = 1.3\,x^{\frac{1}{2}}$; membrane sag/span ratio $c = f(x) = \frac{1}{\psi(x)}$; $\psi(x) = \frac{\sin\alpha}{4}\frac{\partial\phi(x)}{\partial x}$ whence $c = 16\,x^{\frac{1}{2}}$. Membrane elements' dRs have been obtained through substituting said value of c in equation $\frac{dR}{dx} = \frac{1}{2}\,wc\sin^2\alpha\cos\alpha\left(1+\frac{16}{c^2\sin^2\alpha}\right)^{\frac{1}{2}}x$. The membrane area between outer end of rib and central ring was then subdivided into 25 elements one meter wide (dx = 1) and their respective dR computed. Summation of all dRs produced value of R acting on the central ring.



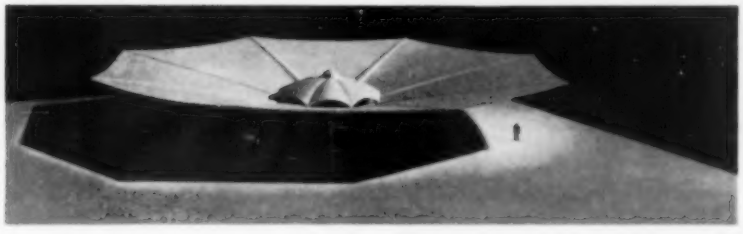


Figure 14—analysis of membrane with curved ribs:* (a, top) *polygonal rib*; (b, above) *continuously-curved rib with outline of analysis by finite-differences method*; (c, left) *groin-ribbed membrane-roof structure designed as a cover for a market place. Membrane material would be concrete-grouted steel-mesh layers*; (d, left below) *all stainless-steel structure.

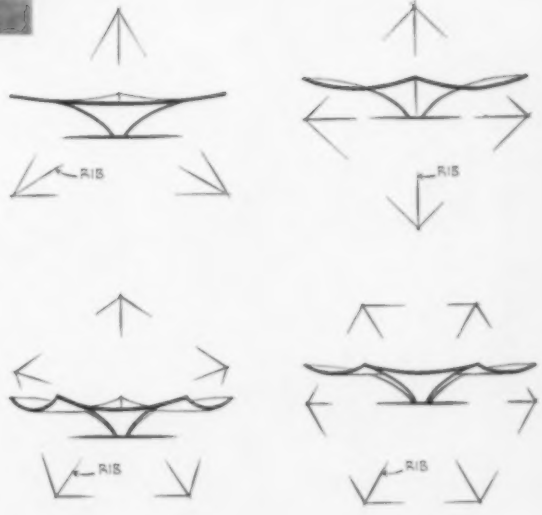


***Figure 15—membrane and rib structures on equilateral plans* (right).**

[3] "Engineers' Notebook," May 1956 *Civil Engineering*.

Nervi), while the other structure (*Figure 14d*) was planned for an all-stainless-steel construction. Possible adjustment of these structures to the requirements of equilateral plan, other than octagonal polygon, are shown (*Figure 15*). The structure (*Figure 16*) features a continuous membrane covering an outer floor area while steel wires support a roofing membrane of acrylic-plastic or resin-glass-fiber material over a centrally skylighted zone. Ribs would be of concrete.

For a structure to shelter a cloister walk (*Figure 17*), the irregularly shaped plan calls for a membrane with variable sag/span ratio and haunched curved ribs to render them axially stressed.

Queries may be anticipated regarding the behavior of these structures under unsymmetrical conditions of loading and upward wind pressure. Replies would depend mostly on specific design load and span assumed. But generally, under upward-wind-pressure conditions, the membrane, acting as continuous thin vaults, may contribute considerable resistance and stiffness. In designs for wide-span ribs, where larger sections are not advisable, tie-down cables may be provided at their outer ends to stabilize the structure. However, no particular difficulties are expected in tackling these and other structural problems, should support be secured for advancing the present phase of exploratory investigation and preliminary design to that of experimental work and final planning.

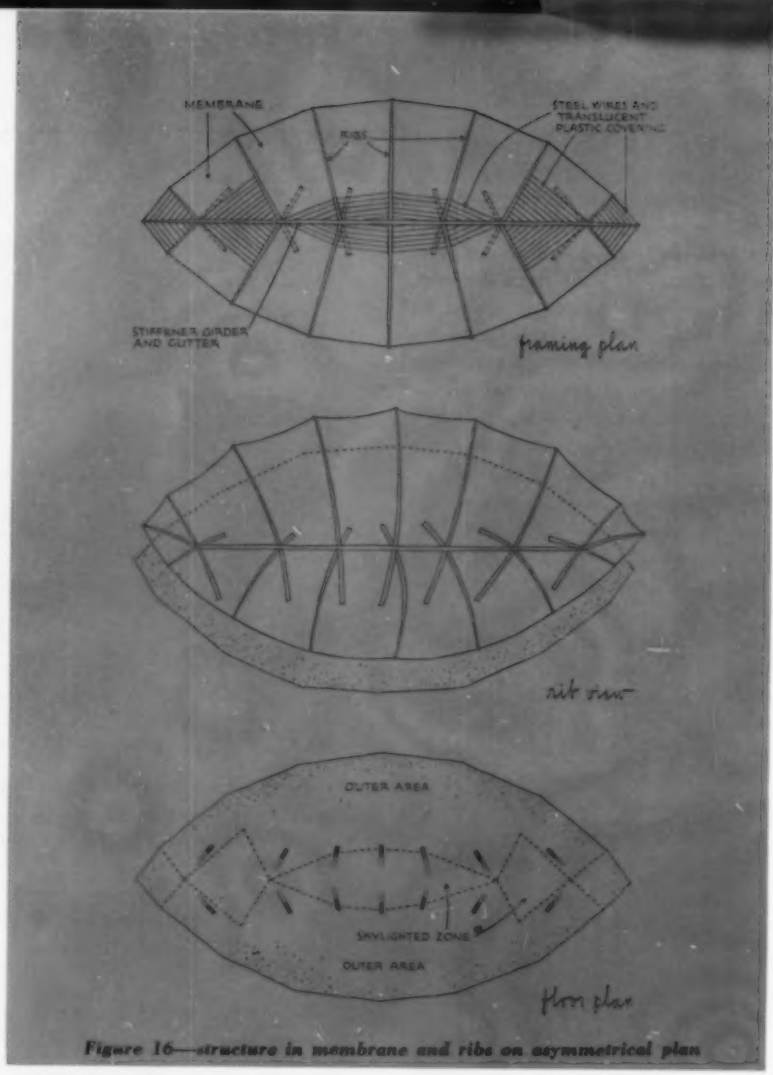


Figure 16—structure in membrane and ribs on asymmetrical plan

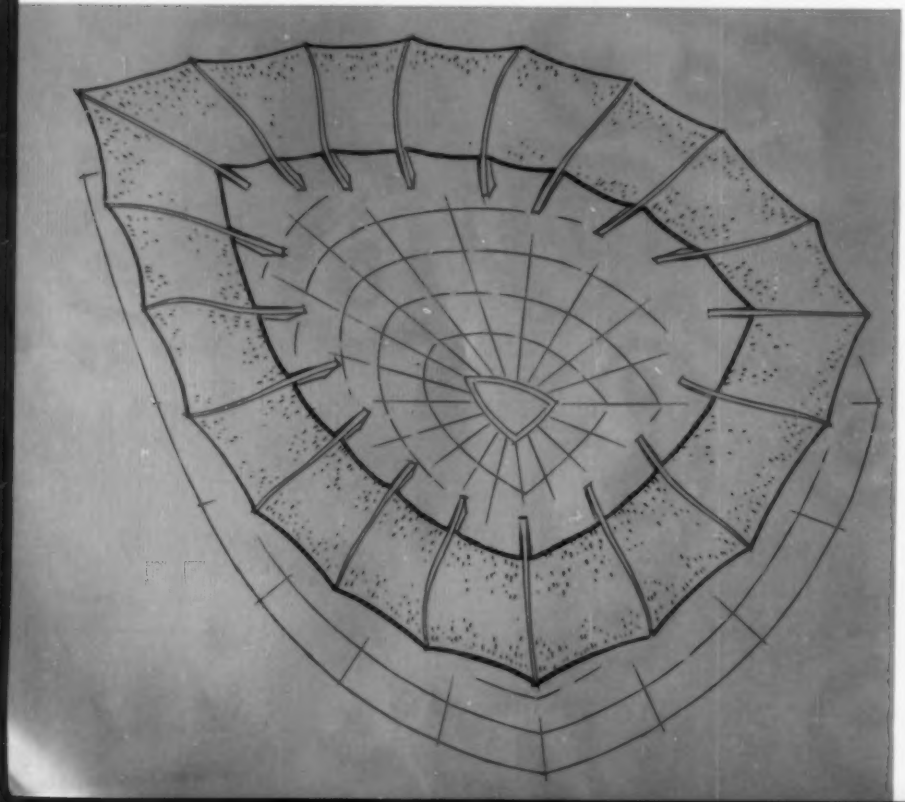


Figure 17—visualization of a structure with variable sag-span ratio and haunched-curved ribs designed to shelter a cloister walk (below).

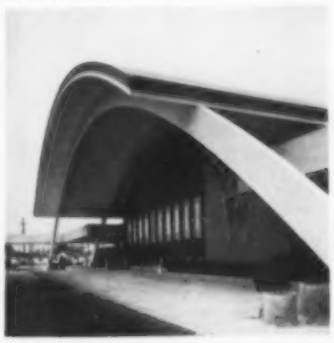
Early this year Chelazzi had the opportunity to present his views on membrane and cable-arch structures in architecture in a series of lectures before the Faculty of Architecture at the University of Florence, and at the seminar organized for American Architects Fulbright Grantees in Rome. He feels that the keen interest shown in academic and in some professional circles reveals a clear indication of a trend which may eventually lead to a widening utilization of steel-wire cable as an advantageous and mechanically efficient building material.

For professional comment on this article, see VIEWS (page 13). B.H.H.

department store

"candy garden"

prototype supermarket



commercial buildings

The business community has long been one of the profession's richest clients—in every sense of the word. Not only has it accounted for a great *many* commissions, but also it has had the wherewithal to offer some of the most succulent "plums" in the orchard. Furthermore, it has been and continues to be one client group that, in the main, has been willing (even anxious) to go along with progress. This is for at least two reasons:

1. In the competitive world of business, no little has been gained by those firms that manage to identify themselves as leaders, as being as up-to-date as tomorrow; and

2. The man who commissions a factory or other place of business seldom does so sentimentally. He wishes to obtain the most efficient "machine for working" that modern technology and the architect's resourcefulness can provide. If, in addition, he obtains a thing of beauty, noticed and talked about, he earns a sizable increment that may cost few, if any, additional dollars.

When Lever Brothers built its New York headquarters, the firm commissioned a sparkling structure that in a few short years has become a Manhattan landmark. Hudson's of Detroit has surely gained prestige—and, one may safely assume, increased business—through being the sponsor of the Northland Shopping Center. Also, Prudential Life has not suffered from having underwritten one of the best office buildings in Los Angeles.

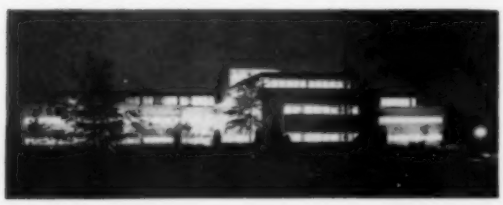
One instinctively looks for progressive architecture in buildings for business. And, while the score is far from perfect, the incidence of excellence is impressive. In this issue, P/A cuts a wide cross-section through the many types of buildings designed to serve commercial interests. Universally evident is the constant search for design refinement that results increasingly in a more mature commercial architecture.

silver shop

factory complex

branch offices

home offices

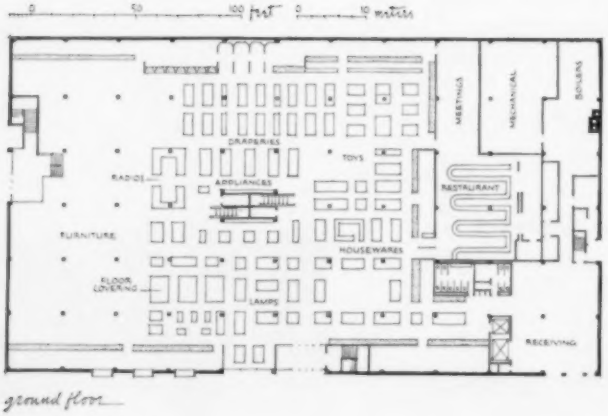


commercial buildings: department store

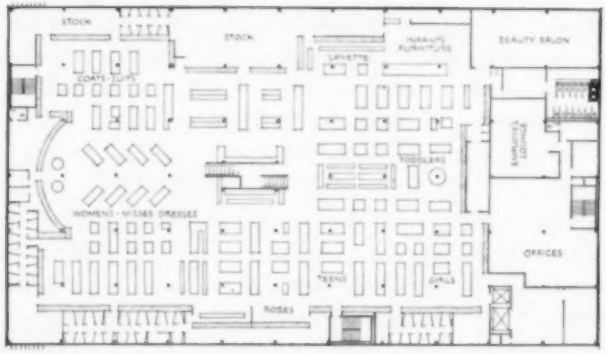
location	Langley Park, Maryland
interior architect	Meyer Katzman
associate-in-charge	Richard Katzman

Focus in this presentation is on the interior design of three floor levels in a suburban department store. The structural shell, a new building of simple rectangular shape, was designed by Abbott Merkt & Co., Engineers, New York. Column spacing in both directions was set at 25 ft on centers, dividing the floor area into six bays in width, and eleven bays in length. Aside from one set of escalators, more or less centered, no structural or immovable elements stood in the way of the interior designer. His chief objective thus became the creation of sales departments of individual character, while maintaining uniformity and spaciousness. This design objective has been successfully met by a series of perimeter wall fixtures reaching from floor to within 1'-6" of the ceiling, each adapted to its special display requirements on the customer side, each backed with standard metal shelving toward stock rooms. Continuity between one department and the next has been achieved by means of a 5-ft module—a measure directly related to the 25-ft structural module and a dimension suitable for the display and storage of most sales articles. Since these fixtures are also provided with wall standards, necessary changes —from shelving to hangrods for example —may be easily made. The 5-ft module is particularly apparent in the spacing of the vertical steel members which tie perimeter fixtures to the ceiling. To maintain openness in the center of the floors, fixtures in those locations are low, only occasionally topped with super-structures serving as lighting fixtures. Here, as well as in the ceiling pattern, the basic module has been maintained, in order to quiet and unite the many elements required. Ceiling surfacing, supported on a suspended frame, consists of glass-fiber boards. General illumination is provided by recessed spot lights and eggcrate fixtures fitted into the suspended frame. Ceiling panels are removable and may be interchanged as needed. The floor surface at the ground level is asphalt tile; terrazzo on the first floor; and carpeting on the second floor. The color scheme employs white or neutral colors in back of all sales articles; red birch and oil-finished teak for sales fixtures; and strong colors for vertical supporting members and display panels of perimeter wall fixtures.

Photos: Alexandre Georges

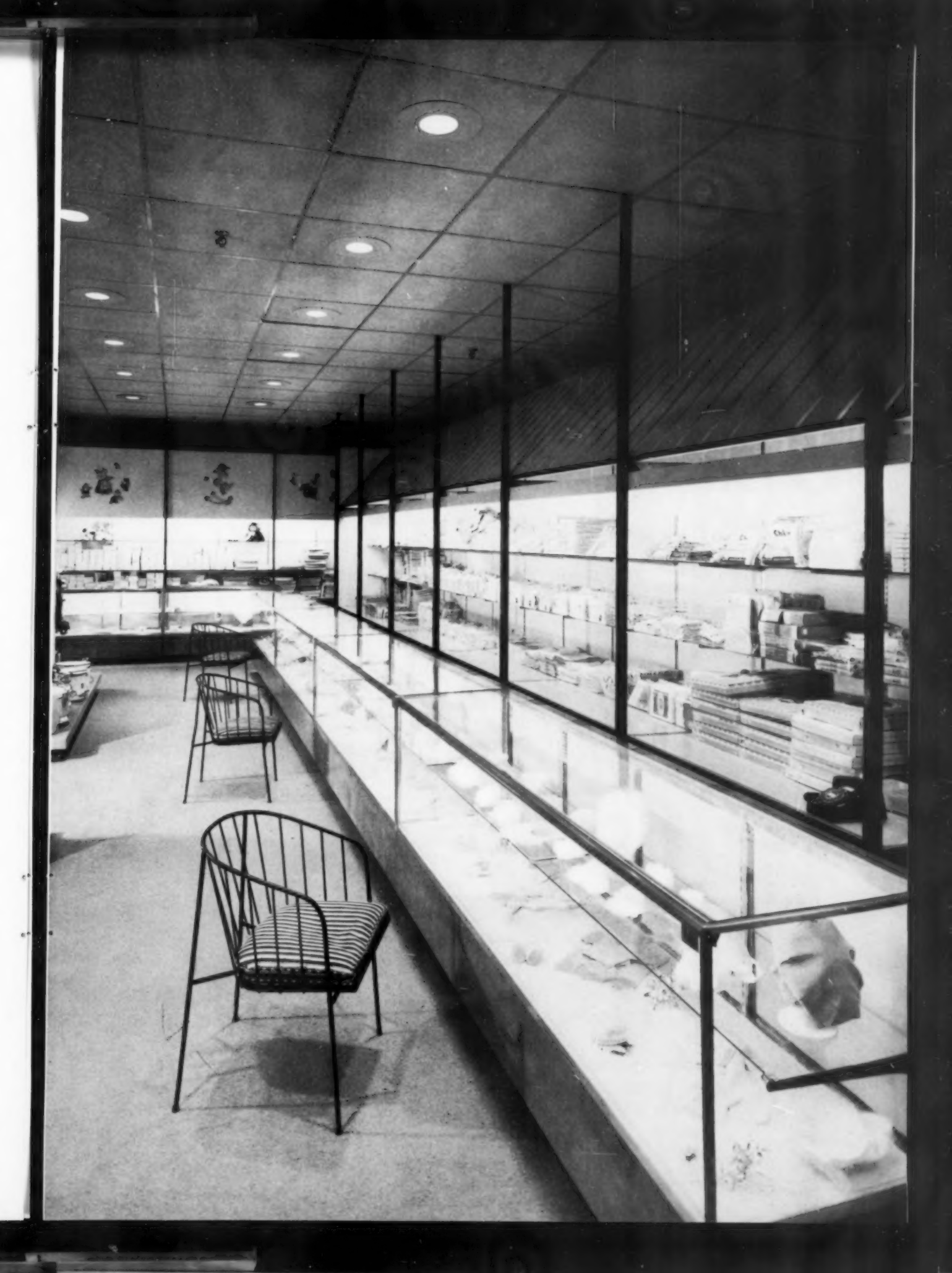


ground floor

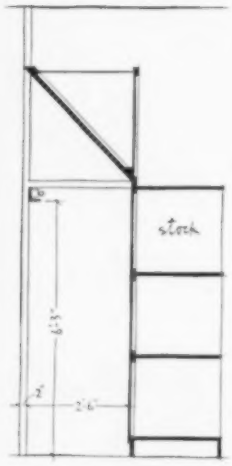


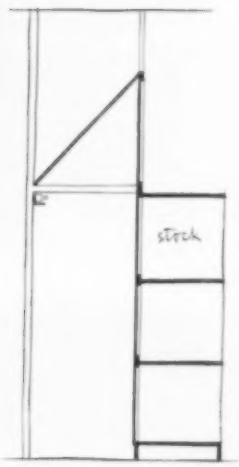
second floor

first floor



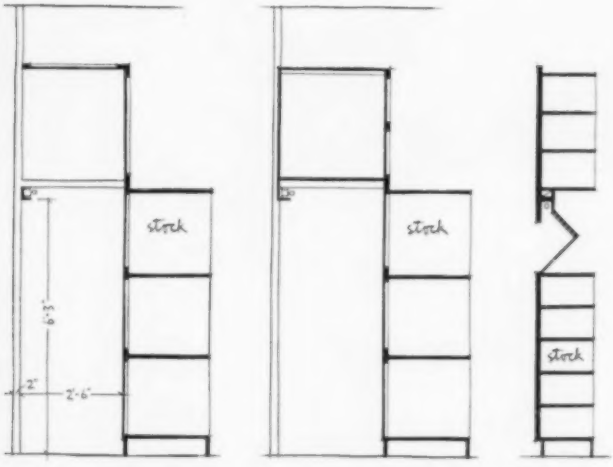
department store





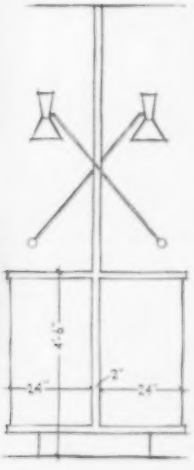
Perimeter wall fixture (above) *employs 6½"-wide boards, spaced 1" apart, to emphasize the individuality of this department. Mirrors are directly mounted on metal uprights.*

Perimeter wall fixtures (acrosspage, below *and* right) *with forward-sloping plywood panels form backdrops for a wide variety of signs and displays. Uprights are coated with a plastic finish, plywood baffles are lacquered with white or gay colors.*



Other variations in the design of the perimeter wall fixture are noted in the shoe department (top) *with recessed display shelf at eye level; in the drapery department* (above) *which employs vertically placed plywood panels; the glassware department* (right) *with vertical glass panel in front of a light-reflecting baffle; and men's wear department* (acrosspage bottom) *using vertical teak panels.*

Island sales fixtures (right *and* below, also SELECTED DETAIL) *can be adjusted to the display of such merchandise as glass, silverware, men's furnishings, hats, lingerie, yard goods, etc. Display cases are spotlighted from super-structure above. Rods and light cones are of brass or lacquer-finished metal.*



commercial buildings: candy garden

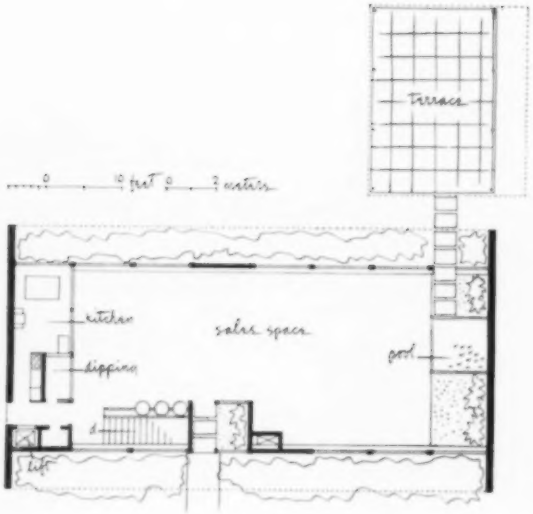
location	Union, New Jersey
architect	Meyer Katzman
associate-in-charge	Robert A'pern

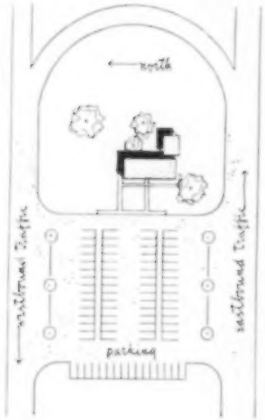
This colorful commercial unit is a most exceptional type of facility and it occupies a customer-luring site that many a retail enterprise would envy. Basically it is simply a retail candy store—one of the chain of Lofts Candy Shops in the New York area. But unlike most of the shops that are at busy in-town locations, this one, a "candy garden," is located out in the country, on a broad grass strip between the east- and west-bound lanes of U. S. Highway 22. Hence, the unusual provision for parking, and turn-around lane.

Here motorists may drive in simply to buy confections; or they may stop and lounge on the outdoor terrace; or use the washrooms (in the basement) for freshening up. A diversion is the candy kitchen, where some of the candy is made, which can be viewed through room-height plate-glass panels. Air conditioning makes the place inviting on the hottest summer day.

This building was created as a prototype for repetition at various locations. A come-on, a conversation piece, it is an effective promotional unit for the owner. The steel frame consists of columns and tie channels; end walls are brick cavity, and curtain panels are stuccoed wood stud.

Photos: Alexandre Georges


Terrace
0 10 feet 0 3 metres
kitchen
dining
salas space
pool


north
eastbound traffic
eastbound traffic
parking

candy garden

The bright, bouquet-like color of the sales room occurs on vinyl-asbestos-tile flooring; walls of painted stucco, brick, or vertical wood siding; and wood beams and planking of the ceiling—in addition to the various display elements and the merchandise itself. B. F. Green was Mechanical Engineer for the "Candy Garden"; F. H. Mulcahy, General Contractor.

commercial buildings: prototype supermarket

location	Audubon, New Jersey
architects	Victor Gruen & Associates
project design	Ben Southland

A very special problem that may be involved in designing a building for a chain-store organization is the requirement to develop a prototype which may be repeated (possibly modified) wherever a new "link" in the chain is to be established. To answer the problem, the building so designed must not only serve its specific merchandising purpose but also be sufficiently distinctive in form and appearance that it becomes an immediately identifiable trademark. Such was the case with this supermarket, worked out for a rapidly expanding major food chain. The great arched form, spanned by uninterrupted, soaring, 114-ft laminated wood arches, seems to solve both basic conditions.

Surely it is a readily comprehended architectural form and, if repeated at various locations, would identify itself—without, as the architects comment, "the need for extraneous and arbitrary sign structures." As for its efficiency, it obtains as large an area as possible unobstructed by columns; it is an economical solution; and it answers the basic space requirement for the market portion—"an impressive ceilinged sales area surrounded on three sides by relatively low-ceilinged service areas."

The laminated arches in the main body of the building are supported by small, exposed, steel pipes to minimize the visual obstruction between the lower side areas and the central, vaulted sales space. To avoid unsightly ties or lower bow-truss chords, horizontal forces are carried below grade and transferred to reinforced-concrete arch ties. The wood arches at the front of the market continue to the ground, resting on reinforced-concrete buttresses just above grade.

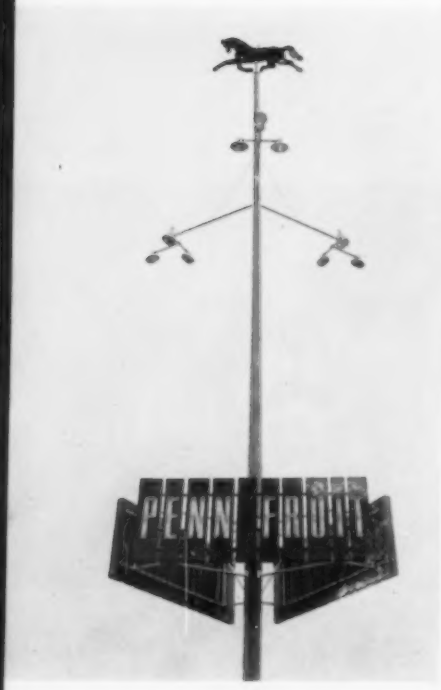
Wood construction consists of heavy timber framing; between the timber purlins are sheets of cement-bonded, wood fiber that provide both roof surface and insulation. A by-no-means unimportant element of the over-all design was the establishment of co-ordinated and characteristic architectural expressions of symbols and lettering which, like the building, would be readily indentifiable as a trademark and repeated in future units.

Photos (except as noted): Lawrence S. Williams

North
Truck Loading
store
market

PEN

prototype supermarket



Gordon R. Sommers

The prototype design was most carefully developed in model form (above) before the first unit was built.

Photos here and on page 105 reveal the fortunate result of studying co-ordinated lettering and sign patterns.

The battery of check-out counters, with suspended overhead-light fixtures, forms a bold and sparkling unit at the front of the main market.

PENN FRUIT
P E N N F R U I T
3-49

In one of the lower bays at one side of the main market floor is the flower mart, handsomely set off against a vari-hued wall of brick.

Materials & Methods

construction

Foundation: reinforced concrete: cement—Camden Lime Company; **reinforcing steel**—Bethlehem Steel Company. **Structure:** frame: laminated-wood arches—Timber Structures, Inc.; walls: concrete block—Stonecrete Corporation, reinforced concrete; floors: reinforced concrete; roof: cement-bonded wood-fiber panels—Insulrock Corporation. **Wall surfacing:** exterior: brick—Diener Brick Company, concrete block—Stonecrete Corporation; interior: brick, plaster—National Gypsum Company; **rest rooms, toilets:** tile—United States Ceramic Tile Company. **Floor surfacing:** terrazzo—Angelo E. Dinon & Son, Inc.; asphalt tile—Floor Tile Division of Hachmeister, Inc. **Ceiling surfacing:** acoustical plaster—National Gypsum Company. **Roof surfacing:** white mineral surface—The Flintkote Company. **Partitions:** metal toilet partitions—Sanymetal Products Company, Inc. **Windows:** plate glass—Pittsburgh Plate Glass Company; custom-design store front and entrance—The Erie Enameling Company and John G. Leise Metal Works, Inc.; custom-designed skylights—Aluminex Incorporated; sign—Philadelphia Sign Company. **Hardware:** lock sets—Sargent & Company; carpet-actuated door controls—The Stanley Works. **Paint & stain:** M. A. Bruder & Sons.

equipment

Special equipment: refrigerated display cases—C. V. Hill & Company, Inc. **Lighting fixtures:** Skyline Lighting Company; Crouse-Hinds Company; Holophane Company, Inc.; Keystone Electric Manufacturing Company; Litecraft Manufacturing Corporation; General Electric Company. **Plumbing & sanitary:** water closets and lavatories—Kohler Company; water heater—A. O. Smith Corporation; sprinklers—Adelphia Sprinkler Company. **Heating:** type: forced hot water; sectional boiler—H. B. Smith Company, Inc.; fuel: oil; finned-tube convectors—Vulcan Radiator Company; unit heaters—Modine Manufacturing Company and The Trane Company. **Air conditioning:** horizontal units—The Trane Company; cooling tower—The Marley Company.

Flooring throughout is terrazzo; ceilings are surfaced with acoustical plaster. General Contractor was McLain Construction Company.

FLORIST

6
item limit
EXPRESS LANE

carriages
thank you

commercial buildings: silver shop

location | New York, New York
designers | Hansen & Thuesen, Inc.

One of the basic requirements for this small retail shop was that it be so planned that one sales person could at all times oversee the store, even when sitting at one of the sales tables or when wrapping merchandise. Display needs were for prominent showing of complete sets of 12 different flatware patterns—to be clearly seen but not handled by customers. Supplementing these, loose trays were to be provided in a cabinet located elsewhere, which could be brought to the tables for viewing. Additional display cases were needed for larger silver pieces.

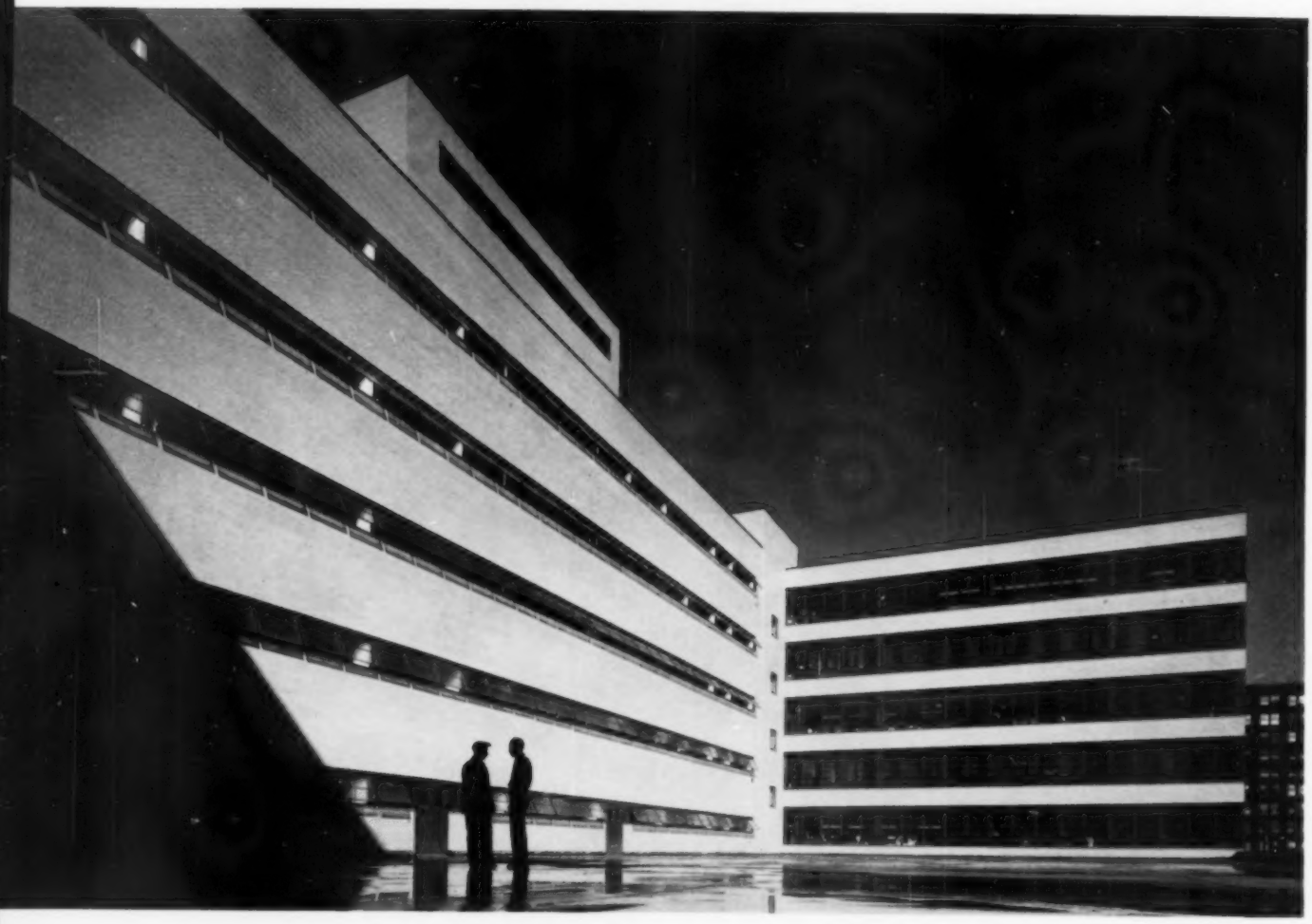
The solution treats the entire store as a showcase. Not even draperies intervene between show window and sales area. Along the walnut-surfaced, right-hand wall are long, recessed display cases for flatware. In the wallpapered rear and left-hand walls are cases, equipped with sliding glass doors, for the larger pieces. Frames around display cases, vertical wall fins, and all other exposed wood is oil-finished walnut. Felt lining for the flatware and jewelry cases is bright tangerine, as is the fabric used on chairs at the sales tables. These tables, incidentally, are of dining-table height to simulate the conditions under which the consumer would ordinarily use flatware. The inside of the showcases for the larger pieces is a light gray-green satin-finished lacquer, a color repeated in the background tone of the white-patterned wallpaper. Vinyl-asbestos floor tile is cork color; hanging ceiling lights are white enamel, satin finish. For ease in arranging the front window displays, as well as to facilitate window cleaning, the cases here have casters on three of their legs, the fourth serving as a pivot.

H.NILS
DANISH

0 5 feet
wrapping
display and sales
work area

commercial buildings: factory complex

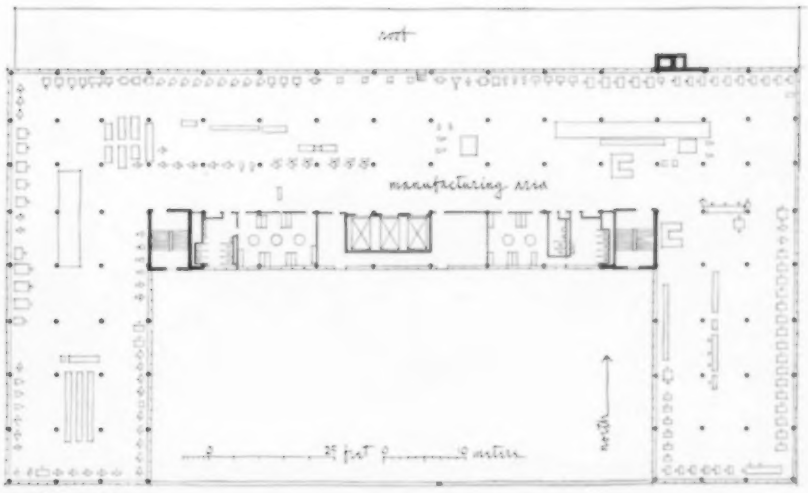
location | Chicago, Illinois
architects-engineers | Shaw, Metz & Dolio



Reversing the current trend of most light industries to build new plants in a decentralized location on the outskirts of the city, or in the country, the Florsheim Shoe Company decided to place its new factory and headquarters offices in downtown Chicago, just across the street from Union Station. Chief deciding factors were proximity to an ample and flexible labor supply and a location central to all forms of transportation. An advantage of the full-block site — rare in Chicago — was a 12-foot difference in grade from the Canal Street front down to Clinton Street, at the rear. Thus, all shipping and receiving is handled at the lower level, without conflict with public and sales floors. Two main functions are housed in the building—executive offices, design, advertising, accounting, and sales departments (located on the main floor) and the factory—actually two complete factories each occupying two of the upper floors. The remaining (top) floor is for leather cutting and other basic operations that serve both factories.

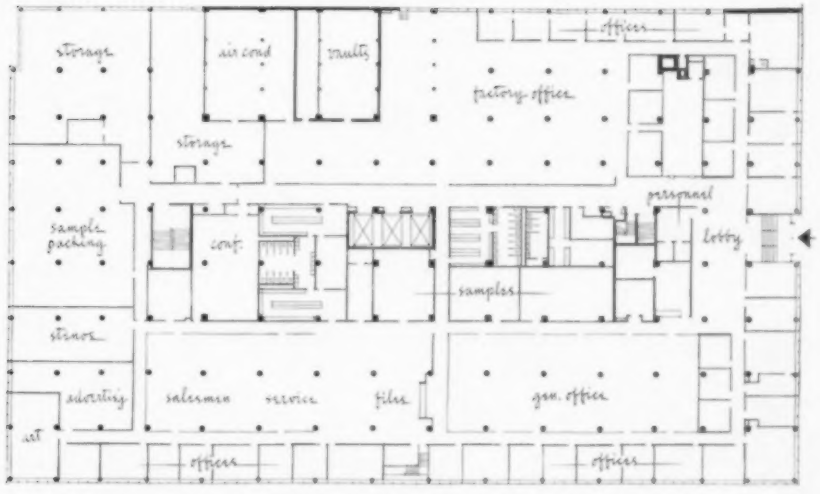
The nature of shoe manufacture requires as much daylighted, perimeter bench space as possible, which accounts for the U-shaped plan of upper floors—a condition protected for all time by setting the building back 23 feet from the north property line. Continuous window bands, with glass on the plane of the brick walls, provide maximum daylight, and the worker's comfort is assured by strip-type radiation installed just below window sills.

The building is a reinforced-concrete structure, with varying floor loads, up to 250 pounds for press-work. Spandrel areas are surfaced with vitreous gray brick. The whole first floor is air conditioned, with zone thermostatic controls. General Contractor for this factory complex was Campbell, Lowrie, Lautermilch.



SECOND FLOOR

MAIN FLOOR



The U-shaped upper floors form a dramatic, southern, rooftop court at the second-floor level (acrosspage); *factory wings at either end; service rooms in the central portion. The uninterrupted bands of windows are projected steel sash.* Photos: Hedrich-Blessing

factory complex

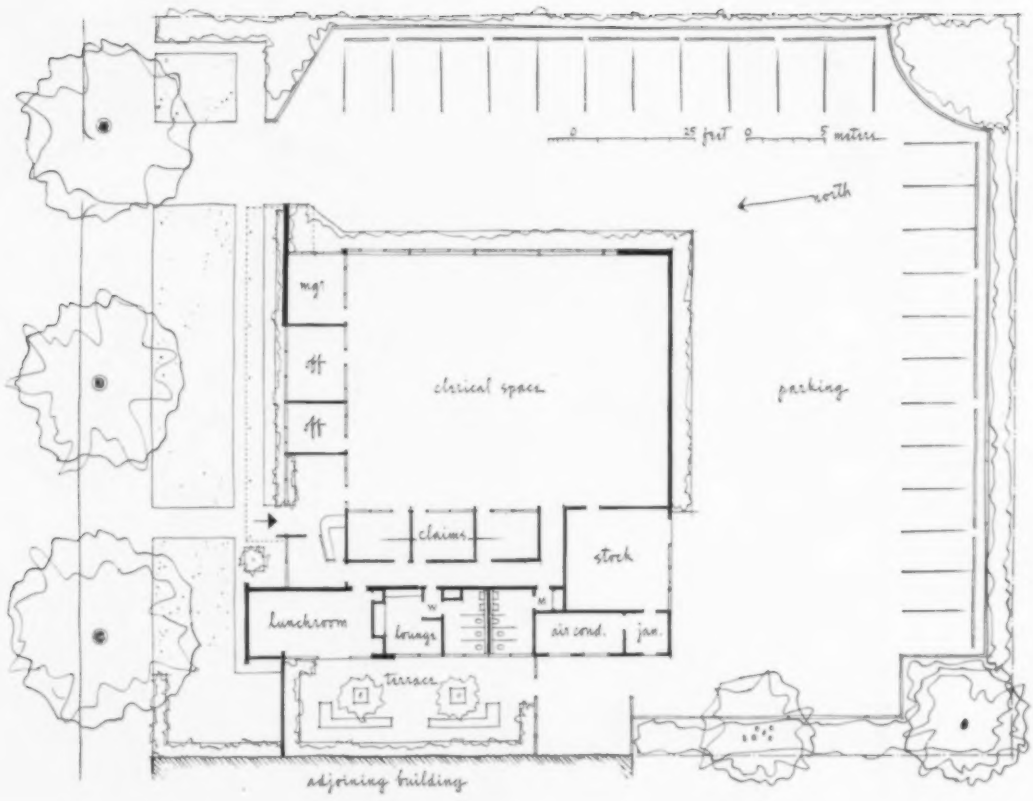
The penthouse that houses equipment for handling contaminated air, leather dust, etc., also serves as a sky sign heralding the company name (top).

General office space (above) *occurs between perimeter private offices and various display, sample, and sales rooms, such as the one shown here* (right).

commercial buildings: branch offices

location	Sacramento, California
architects	Bolton White & Jack Hermann
consulting architect	Gardner A. Dailey
structural-design consultant	Walter T. Steilberg, Architect
landscape architect	Thomas D. Church

branch offices



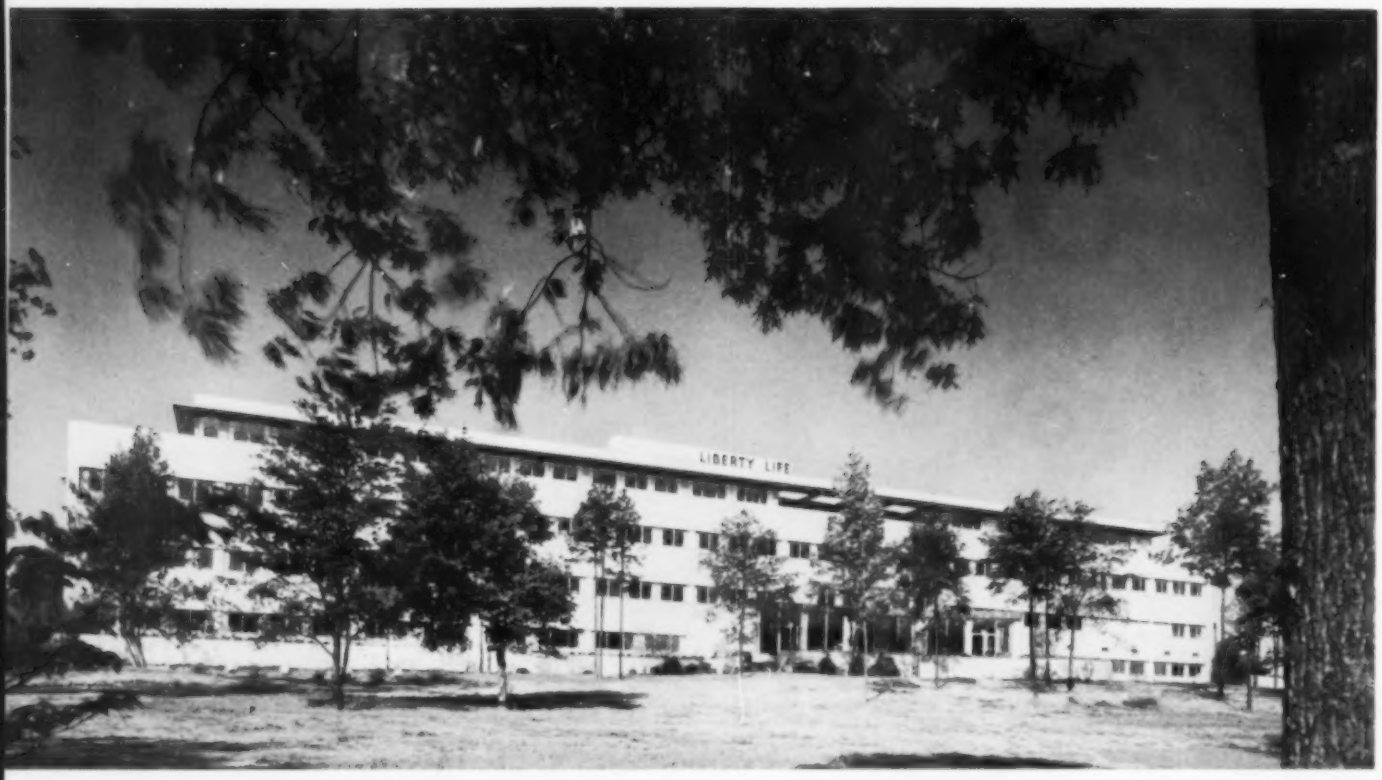
Photos: Rondal Partridge

The first of several projected division offices for the Industrial Indemnity Company of San Francisco, this building serves two categories of the public—insurance brokers and claimants. Hence, the placement of the reception room in such a way that it feeds two separate traffic channels—brokers having immediate access to the clerical space and top division offices; the claimants moving directly to the claims adjustor's offices. A single large room without *physical* departmentalization handles all clerical work—underwriting, claims, payroll, collections, engineering, service, and filing.

The 154-ft frontage of the flat, rectangular site faces north; to the west is a two-story business building; to the east, a driveway; and across the street, a city park. Location of the building 20 feet east of the site's western boundary allowed introduction of a sheltered, landscaped terrace opening off the office lunchroom. Because of summer sun heat in the Sacramento area, the south wall of the building is both windowless and mineral-wool insulated.

Structure, in the main, is wood frame, though certain areas have brick bearing walls, and the large clerical space is framed with steel columns (exposed on the interior and painted coral) and light trusses. The floor is a concrete slab. Exterior walls, other than brick areas, are covered with ¼-in. asbestos cement board applied over wood sheathing and felt paper. The sheets, laid with mastic-lined butt joints, are surface nailed with cadmium-plated drive-screws.

The interior climate is governed by a forced-air system, with air blown over heating or cooling coils as required and distributed through ceiling ducts and diffusers. Return air travels underfloor back to the mechanical room. Keller & Gannon, Mechanical Engineers; Chas. A. Von Bergen, Electrical Engineer; H. W. Robertson, Inc., General Contractor.



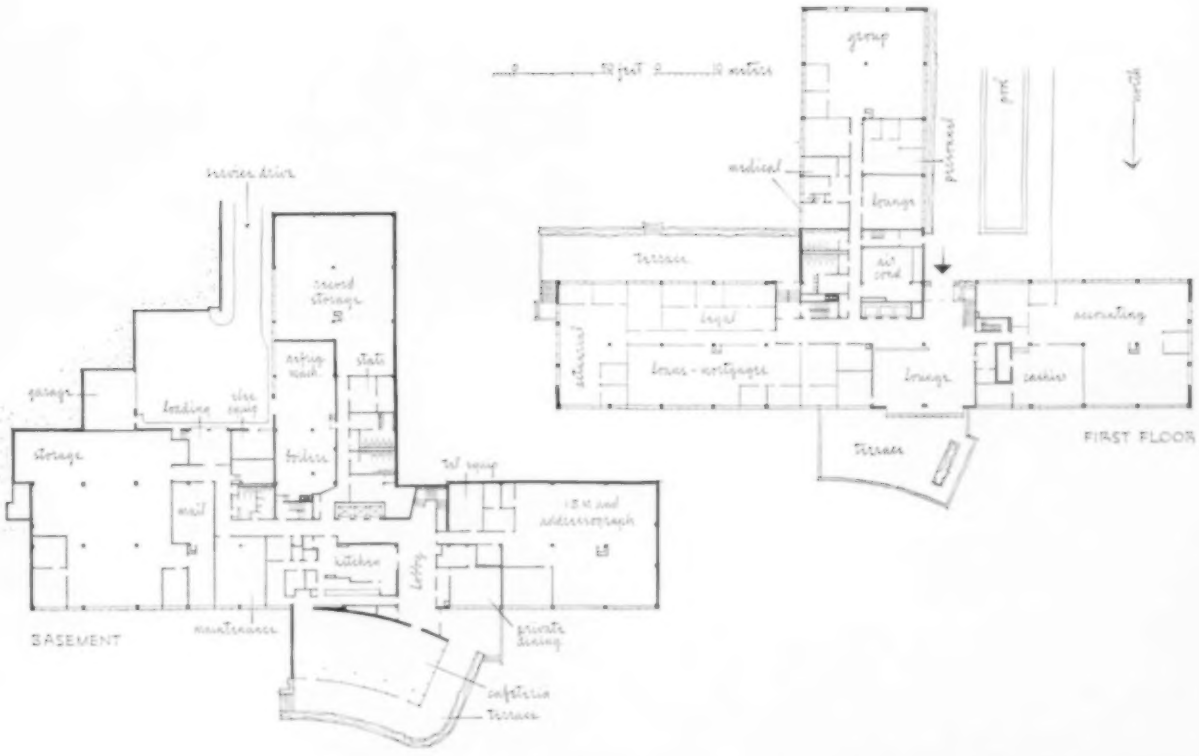
commercial buildings: home offices

location	Greenville, South Carolina
architects	Carson & Lundin
engineers	Lockwood Greene Engineers, Inc.
landscape architect	William Pitkin

Because of rapid growth, the Liberty Life Insurance Company found itself inefficiently housed in a series of makeshift offices scattered throughout the downtown area. To correct this situation and to provide for any anticipated future growth, a handsome, 12-acre site at the City limits was acquired, and the new home office building shown here was built. Should the need arise, a fourth wing, forming a cross-shape plan, will be added on the north side of the present, T-shape structure. The site slopes away to the north, allowing on this side a full, above-grade floor at the basement level. Thus, the curved-walled cafeteria wing (*across-page*), adjoins a paved terrace that overlooks the wooded acres beyond. Longer wing of the building is 64'x324' in area, while the stem of the T is 64'x135'. The third floor is a typical office floor, and the fourth, housing executive offices, board room, etc., is set back from the building line, providing penthouse terraces to which all adjacent offices open.

The steel-framed building has filler walls of block back-up with gray glazed-brick exterior finish. Metal column fascias are painted white, and the entrance is executed in white marble and stainless steel. Because of a hot summer sun, window areas were kept relatively small, and those on critical exposures are protected by louvered aluminum sunshades. A zoned hot-air system heats the building, and a year-round, dual-duct air-conditioning system maintains a temperature differential of 10 degrees between interior and exterior of the building. On the entrance side of the building are separate parking spaces for office personnel and visitors. A service drive leads down to a basement-level loading dock. The Daniel Construction Company was General Contractor.

Photos: Ezra Stoller


50 feet
15 metres
garage
reception
pitch
north
medical
lounge
Terrace
air cond
stairs
ingle
secretary
lounge
canteen
FIRST FLOOR
service drive
record storage
garage
loading
fire escape
sorting room
staff
storage
boilers
mail
T.V. room
I.B.M. and addressograph
kitchen
lobby
maintenance
private dining
BASEMENT
cafeteria
Terrace

home offices

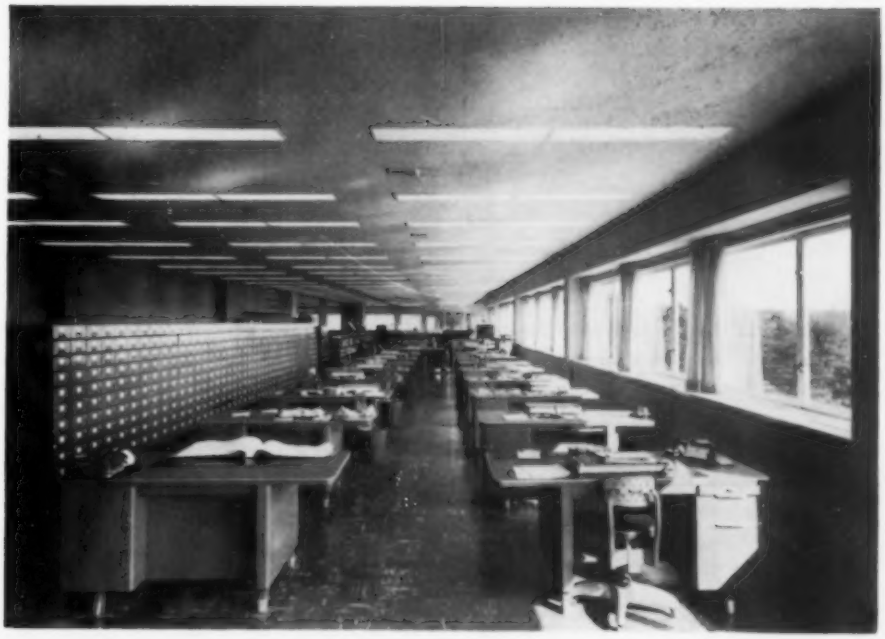
The reception lobby (right) *has a wall of glass, with doors opening to a paved terrace above the cafeteria wing. Floor is travertine.*

The spacious cafeteria (below) *is more like an open pavilion than a room. The floor is surfaced with terrazzo.*

At the entrance (bottom), *dogwood trees border a black-painted reflecting pool in the paved terrace. Above the entrance doors is a fixed, louvered sunshade* (see SELECTED DETAIL).

The quarry-tiled, landscaped penthouse terrace (above) *adds eye-filling dimensions to the executive-office suites.*

General work spaces (right) *are bright and cheerful; flooring is asphalt tile, and the ceilings, as throughout the building, are acoustical tile. Recessed, fluorescent troffers are mounted flush with the ceiling plane.*

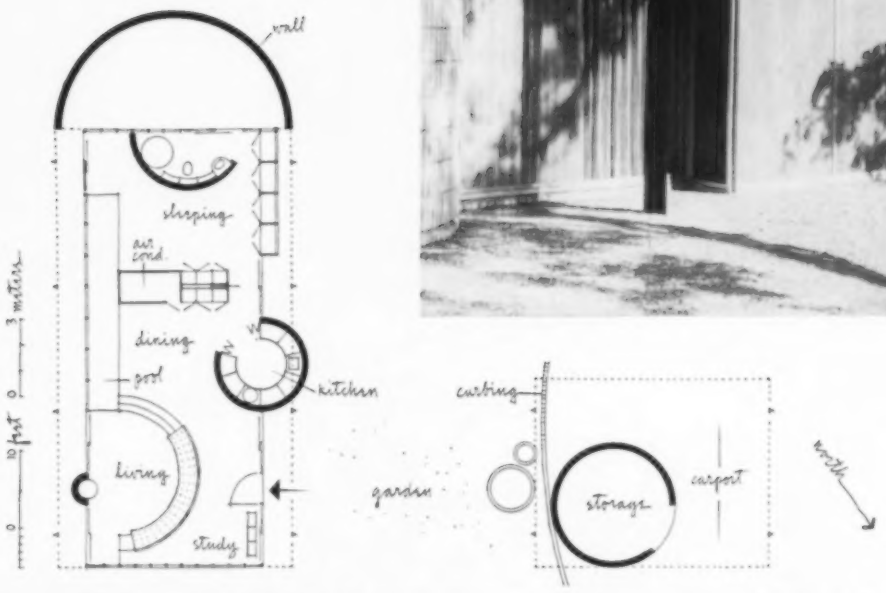


HOUSE

location	Lake Wales, Florida
architect	Mark Hampton
interiors-landscaping	Mark Hampton

While all houses have individual qualities that grow out of personal tastes of the occupants, this pavilionlike structure, disposed to make the most of a view of a bordering lake to the southeast, is more highly individual than most. For it is the home of one person, a bachelor with a liking for frequent, informal entertaining of small groups and an "uncluttered" approach to living. In siting, plan, and disciplined over-all design, it is a clear statement of what this owner wished for living.

Basically, the house is a single rectangular space (solid partitioning to avoid noise or gain privacy not required) subdivided into functional areas by partial screening, storage units, reflecting pools, and curved semienclosures—and by changes in level. The black-painted steel frame of the air-conditioned house stands boldly exposed outside the envelope walls of glass panels or vertically coursed, white concrete brick—as a foil to the natural luxuriance of the surrounding oak and hickory trees. Short end walls are of blue, translucent glass, framed in walnut stiffeners. This device not only introduces a note of color in the house, but also constitutes a constantly changing daytime effect, as the shadows of tracery of surrounding foliage develop their own fluid patterns with the movement of the sun. It further eliminates the need for many draperies.



The structural system is composed of steel T columns, 16 ft o.c., supporting 30-ft steel WF beams. Wood joists (2"x12"), 16 in. o.c., frame between beams; with 2"x2" furring strips on top for through ventilation. L. F. Martin-Builder, Inc., was General Contractor. Photos: Alexandre Georges

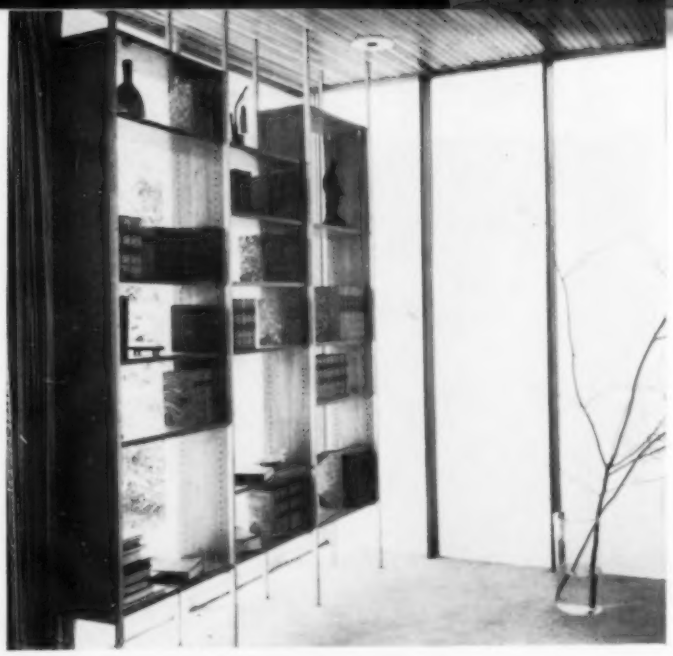
In the living/dining area, organized on two levels, Spartan restraint was exercised in selection of furnishings—the curved couch focusing on the fireplace niche and view of the lake beyond; one or two occasional chairs; the dining table and its chairs; and a metal-based, marble-topped coffee table. Color is chiefly gray (carpet), blue (sofa-pillow upholstery and the translucent glass end walls), and warm wood tones (walnut casework), ceiling of random-length strips of pecan flooring.

In the sleeping bay of the house (above) *one whole side wall (background) is of walnut-doored closets. The curved masonry wall at left encloses the bath.*

The round kitchen (right) *left of photo opens by folding doors to the dining platform; kitchen flooring is oiled slate, and the room is daylighted by a blue-glass skylight.*

The pecan ceiling is of 1½-in. wide strips, with a ⅛ in. revealed joint, which "has proved to be satisfactory acoustically."

house



At left of the entrance door is a freestanding book-storage unit (right) *with metal standards, and adjustable walnut shelving; translucent blue-glass wall beyond.*

Only division between sleeping bay (*foreground*, below), *and living/dining space* (*background*) *is a blue-painted reflecting pool, one end of which occurs in each area, and the partial storage wall, including housing of the air-conditioning blower* (*left of photo*).

Heating and air conditioning of the house is by a water-to-air heat pump, with a remote unit located in the round storage room in the carport.

total air conditioning for hotels

by F. G. Honerkamp*

A major trend toward total air conditioning is developing in the hotel industry as a result of recent technical advances made in the design of air-conditioning equipment for hotels. High-velocity air distribution is attracting growing attention as a potential solution for many of the problems in total air conditioning.

As air conditioning has become increasingly accepted as a requirement in many types of buildings, hotels have lagged behind in providing guests with comfort cooling. Although most hotels have installed some type of air conditioning—usually in lobbies, restaurants, cocktail lounges, and other public rooms—a recent survey shows that only 20 percent of hotels with 100 or more guest rooms are totally air conditioned.

Hotel managements have long been concerned with this situation and have attempted to meet the problem. Until the advent of high-velocity systems, a major obstacle to installation of central systems was the lack of space to install the bulky ductwork required for conventional air conditioning. Almost all new hotels are air conditioned, but—aside from resorts—only eight major hotels have been built in the United States since 1933. Most of the nation's hotels were constructed more than 20 years ago, with no provision for installation of air-conditioning equipment. In New York City, for example, 84 of the city's largest hotels were built in the period 1927-1933, and almost none have been built since.

air conditioning in hotels

The problem of air conditioning hotels, therefore, boils down to (1) finding space in older structures for the equipment required to serve a large number of small rooms, (2) providing each room with individual control, and (3) accomplishing these ends while utilizing each cubic foot of space fully during installation, since metropolitan hotels are generally centrally located, and built on extremely valuable land. High velocity is now considered capable of effecting substantial savings of space in the guest-room areas, due to use of smaller ductwork.

After World War II the hotel industry embarked on a series of large-scale improvement and modernization programs that so far have amounted to over $3 billions. Many managements wanted to include air conditioning in these projects, but found their buildings were poorly suited to installation of conventional systems in the guest rooms. The majority of hotels have, therefore, confined central systems to public rooms. The familiar "window-box" units have been tried for guest rooms and generally found unsuitable for hotel application because of their appearance from the inside as well as outside. In addition, the necessity for frequent maintenance is troublesome to management and inconvenient to guests. The air-conditioning systems that have been installed in hotels, whether in public spaces or throughout the building, have proved their value both in terms of comfort for the guests and profit for the management. The trend of the day is to extend air conditioning throughout the building wherever possible, with special emphasis on sleeping rooms, since these are, of course, the areas where the guests spend the greater part of their time in the building.

all-air high-velocity system

Savings of space and economy are important features in an air-conditioning system, but the most obvious advantage of the all-air high-velocity system is that it makes it possible to add air conditioning in buildings where previously this could not be done under any circumstances. In addition, cutting large openings to accommodate the ductwork of low-velocity systems can seriously weaken the building structure.

The advantages of installing high-velocity systems in old buildings also apply to new buildings, with some savings applicable only to new construction. Advantage can be taken of the space-saving features of high velocity in reducing floor-to-floor heights. This allows the architect to get more floors into a building of given height than would be possible with low velocity. In many cases this is especially valuable when zoning laws or earthquake hazards restrict the height of a building or the building is constructed on land so valuable that all available space must be utilized to the fullest.

design features of high velocity

The high-velocity system consists essentially of a conventional refrigeration system including refrigerating compressors, condensers, chillers, heat exchangers and heating coils, cooling tower, conditioning water and condenser water pumps, and a central-plant air-conditioning unit or units of the designer's choice. The air is filtered, cooled, and dehumidified — or heated and humidified — in the central air-conditioning unit. The system draws in outside air, mixes it with return air from the building, passes the mixture through the air-conditioning unit, and distributes it through a high-velocity system to the conditioned spaces. Since the velocities at which air is sent through the ducts are much higher than in conventional systems, the size of the ducts may be reduced proportionally. For example, if the velocity of air in the ducts is 6000

* *Chief Engineer, Anemostat Corporation of America, New York, N. Y.*

fpm, the ducts need be only one-fourth as large as those for air moving at 1500 fpm, with the same amount of air being delivered in both cases.

In addition, the high temperature differentials which are possible in a high-velocity system reduce the amount of air required in a room, since the amount of cooling is a function not only of the amount of air supplied, but also of its temperature.

In the all-air system, all refrigeration is accomplished in the central plant, and the only elements of the system present in the rooms are the attenuator-diffuser units. The attenuator-diffuser unit consists of a sound-attenuating chamber, tapped onto the supply ducts, which feeds directly into the diffuser. The attenuator chamber reduces the velocity of air fed from the ducts and, in addition, reduces the noise generated by air moving at high speeds. The diffuser takes in room air, mixes it with air from the supply ducts and discharges it draftlessly into the room.

Since there is no established requirement as to the location of the sound-attenuator units and diffusers, any suitable location in a room can be used and the availability of a variety of units adds considerable flexibility to the system. Some rooms can be equipped with under-window units, others with ceiling units, and still others with sidewall units, depending on the cooling requirements of the room or the structural features in the area. The location of the attenuator-diffuser combination in a corridor, with the outlets protruding into the room, is one of the possible systems that renders high velocity particularly adaptable to the hotels.

The system may be controlled as any conventional central-plant air-distribution system except that special consideration must be given to balancing and/or modulating the flow of air due to the noise potentialities of high-velocity air. The success of this system depends on securing an air outlet that can control the air flow with a minimum of noise while aspirating a sufficient quantity of room air to be mixed with the air from the system. This will allow conditioned air to be introduced into the occupied space at a reasonable temperature.

high velocity in hotels

It will be seen that this system is adaptable to hotel use and meets the special requirements of hotel air conditioning, which follow:

Economy of installation. Small ducts in high-velocity system require less sheet metal and less insulation and, therefore, require less installation time and lower cost for the basic materials.

Minimum building alterations. Obviously, the use of smaller ductwork cuts down the amount of alteration in the building. Some cutting through walls is necessary during installation but this is reduced considerably. Following installation, the holes must be patched and the ductwork furred in.

Minimum revenue loss during installation. Since in most cases round ductwork is used, a core-boring machine can be applied to cut down working time during installation. In a high-velocity system the only element of the system present in the room is the diffuser, and this can be installed in a short time. With careful planning, not a day's room rent need be lost during installation.

Individual-room control. In a hotel room, control is essential for two reasons: (1) the comfort of guests whose tastes are likely to vary considerably, and (2) economical operation of the system, since rooms can be closed off from the supply when not occupied. High velocity can be controlled in various ways: Manual control, directly at the diffuser, regulated by the occupant himself when he feels the room is too hot or too cold. Remote manual control can be used where the diffuser is installed above the door or in the ceiling, in which case a flexible cable connects to the diffuser inlet. Thermostatic control can also be used where the strategically located thermostat changes the temperature of air supplied to the room according to the initial setting and the change in room temperature.

Draftless air diffusion. This is important in hotel rooms because the system must

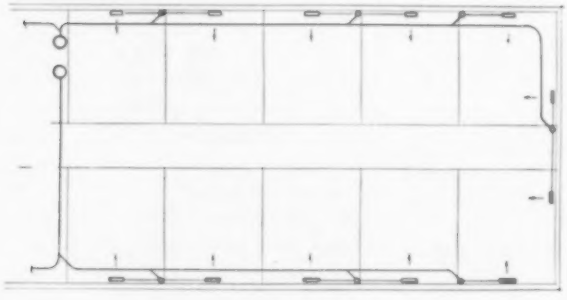


Figure 1—single-duct under-window installation: two zones fed from two risers distribute high-velocity air in perimeter areas through horizontal ducts beneath floor. Take-offs may feed one or two under-window units.

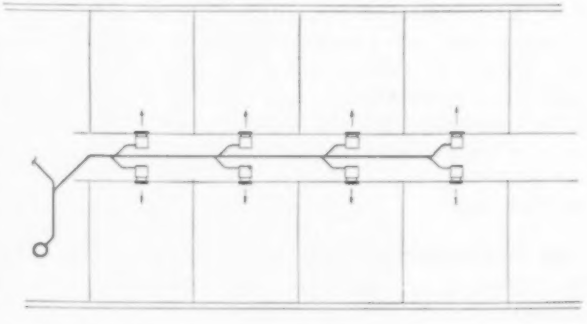


Figure 2—single-duct corridor distribution. Duct furred-in under corridor ceiling feeds high-velocity air to attenuator boxes with outlets projecting into rooms. This installation reduces work done in rooms.

be capable of operating 24 hours a day. The occupant of the room is likely to spend more time in a hotel room than in, say, a theater, and thus is more apt to feel any draft that develops as a result of poor diffusion. The high-velocity system makes use of a sound-attenuation and pressure-reducing chamber, which reduces the velocity of supply air and consequently reduces the drafts in the room. In addition, the cones or vanes on a properly designed diffuser direct the air in such a way as to create an air flow in the room imperceptible to the occupants.

Quiet operation. In a hotel room, due to the 24-hour occupancy, it is one of the most important factors to be considered. The all-air high-velocity system makes it possible to eliminate outside or street noises, and careful selection of equipment and equipment location should minimize the creation of additional noise sources. The high-velocity sound attenuator terminal chambers, constructed with sound baffles and glass-fiber insulation, absorb a great deal of noise which might be air-borne, generated by the fan, or in the ductwork. A wide variety of available sizes of attenuators makes it possible to design a system for any desired sound level.

One source of noise that is definitely eliminated in high-velocity systems is cross-talk between rooms through the duct system. Whether the system is in operation or not, there is no possibility that the duct could act as a transmitter of any sound from room to room, as there are always two sound-attenuator terminals between each room.

Ease of maintenance. The high-velocity system eliminates all fans, filters, coils, and motors in the room. Therefore, there is no need for any servicing of the room unit beyond an occasional dusting. This, of course, is important for hotels, since the cost of conducting regular maintenance on several-hundred individual units could be quite considerable, and troublesome to the guests of the hotel. An incidental advantage is the elimination of redecorating following visits by the maintenance man, due to chipped paint or finger marks in the vicinity of the unit. All equipment requiring maintenance is in the main equipment room and can be serviced without causing any inconvenience to the guests of the hotel.

The all-air high-velocity distribution system meets these requirements to a greater extent than any other system in use. An additional advantage is the inherent economy of operating the system. Since it is possible to operate on a 100 percent fresh-air supply, a large part of the cooling can be done without running the refrigeration equipment. During the spring and fall and even in early and late summer, the outside air might be cool enough to be introduced into the space and provide the required cooling without the aid of the refrigeration plant.

high-velocity distribution systems

Each hotel application, of course, requires a study of what is needed to integrate the system into the building for which it is designed. The general characteristics of the two principal types of systems can be only a guide to further variation, and no formula can be given that will apply in individual cases. The following, however, are the main types of air-distribution designs:

Single duct. In this system, the air from the main unit is distributed throughout the building through a single riser or duct per zone, with one outlet for each individual room (*Figures 1, 2, and 3*). Temperature control in this type of system consists of varying the amount of air supplied to the area, by regulating a damper at the attenuator-diffuser unit. As air supplied to the attenuator is decreased, the temperature in the room is reduced.

Dual duct. This type of system, which was rarely used before the development of high velocity, has steadily increased in popularity with the growing use of high velocity. Instead of one duct, air from the main unit is feed into a hot duct and a cold duct (*Figures 4* and *5*). The two ducts run parallel to each other throughout the building. At each outlet, both ducts tap onto the attenuator unit.

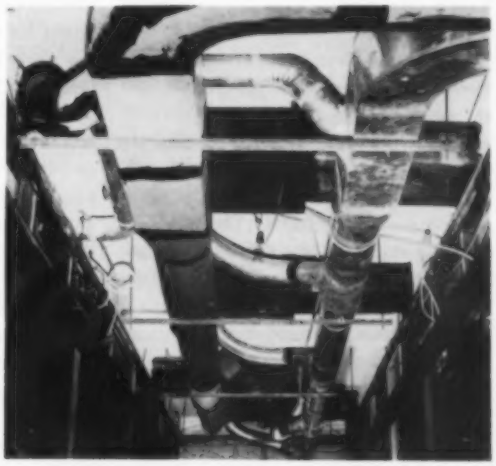


Figure 3 — small size of high-velocity ducts permits installation of ductwork above hung corridor ceiling. Attenuator boxes of single-duct system in corridor are tapped onto duct; sidewall diffusers inside rooms are attached directly to attenuators.

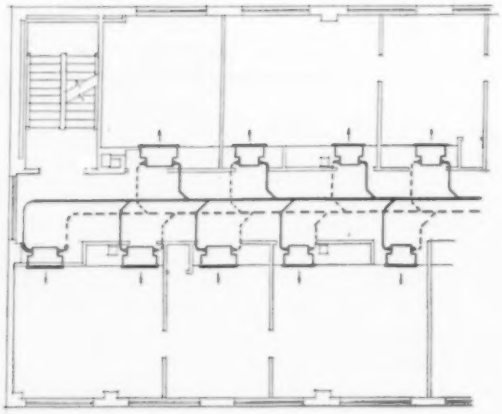
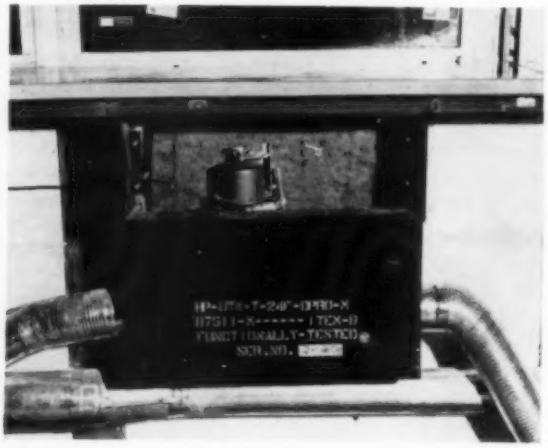


Figure 4—dual-duct corridor distribution. Both hot and cold ducts, furred-in under corridor ceiling, feed attenuator-diffuser units projecting into rooms. Each room is equipped with automatic control for temperature regulation.

Figure 5—under-window unit is fed from a hot and a cold duct. Dual-duct systems permit high degree of individual room control. Proportions of hot and cold air are established in attenuator section of unit by automatic or manual control.



The hot and cold air are mixed in the attenuator, and the resulting mixture is discharged into the occupied area. Temperature is varied, not by regulating air quantities, as in the single-duct system, but by changing the proportions of hot and cold air supplied to the attenuator. It is important to note that the total quantity of air supply remains constant.

This system is, of course, much more flexible than the single duct and, as noted above, can be used for heating as well as cooling.

diffusion

The diffuser selected for any particular installation should discharge the air into the occupied area so that it is delivered in a multiplicity of turbulent moving air currents. While the air is being diffused, an amount of room air equal to as much as 100 percent of air supply is mixed with the supply *in the diffuser itself* be-before the mixture is discharged into the room. This effect, known as aspiration, creates uniform air motion in the room, thereby eliminating the sensation of drafts, and at the same time eliminates sharp variations in temperature throughout the area. The aspiration effect cuts down temperature differential in the zone of occupancy.

The combined attenuator-diffuser units for all-air high-velocity application contain all volume controls for adjustment after installation without disturbing the wall or ceiling surfaces. The attenuator chamber insures quiet operation of the system and reduces the velocity of air supplied from the ducts.

The diffuser is one of the most important elements in an air-conditioning system: the finest air-conditioning system will be a failure if the diffusion is poor and if the occupants of conditioned areas are subjected to drafts or poor temperature regulation.

As in the case of system design, no precise and universally applicable guide can be given to selection of the proper unit for all jobs. The unit to be used will depend on outside temperature, amount of control desired, sound level, and many other factors. The most widely used units are the following:

Sidewall units. Any wall in a room, except outside walls, can be employed to accommodate a sidewall diffuser. These are of the "straight-line" type, consisting of a number of vanes slanted to provide the proper aspiration effect and diffusion pattern. The vanes direct the air parallel to the surface of the diffuser, so that it is gradually mixed with the air in the room.

Under-the-window units. The location of equipment under the window has been a favorite one since the days of the cast-iron radiator. It is by now accepted that this space is expendable. In addition, there is, of course, the sound reason of taking care of a heat gain or heat loss at the spot where it is most noticeable, and this is in the proximity of the windows. High-velocity diffusers may be mounted in sill or wall discharge, horizontally, vertically, or slanting, depending on circumstances. The air is directed upward along the wall, entraining the cold or warm air from the windows. The air moves up to the ceiling, across the ceiling, and thus throughout the room in a draftless pattern.

Double-glazed windows and insulating glass have greatly reduced the discomfort of the window areas, but structural considerations sometimes make this area an ideal location for the diffuser.

Ceiling units. When neither walls nor under-window spaces are available, the ceiling may be utilized as a base for the

TABLE I: Comparison of All-Air High-Velocity Air Conditioning with Other Systems Used in Hotels[a]

	All-air high velocity	Multiple unit for small spaces	Water and air high velocity	Standard low velocity	Window unit
Initial cost [b]	1	1.34	1.25	1.18	.62
Installation economy [c]	2	4	3	5	1
Individual room control	Yes	No	Yes	No	Yes
Quiet operation	Yes	Some noise	Some noise	Noise and cross talk in ducts	Considerable noise
Maintenance in room	None	Periodic cleaning of coil and drain pan	Cleaning of coil, drain pan, and air nozzles	Periodic cleaning of coil and drain pan	Annual inspection of compressor; removal of dirt and lint from finned coil surface
Floor space required (under-window unit only)	1-2 sq ft	4-7 sq ft	4-5 sq ft	1½-2½ sq ft	None, but requires window space instead

[a] Based on system designed for medium-sized hotel with rooms approximately 20'x10' with 9'-6" ceiling.
[b] Expressed as a multiple of the cost of the all-air high-velocity system.
[c] Least expensive rated 1, next least expensive 2, etc.

diffuser. Ceiling diffusion is the most efficient, since the air may be directed into the room from an advantageous height. Ceiling diffusers may be either round or square.

high-velocity compared with other systems

A general comparison of the all-air high-velocity system and four other types of systems used in hotels is shown (*Table I*). Since the conditions would vary from building to building, the comparison is based on a medium-sized hotel with rooms of approximately 20'x10', with a 9'-6" ceiling. Chosen as specific points of comparison are factors of installation, cost, operation, and maintenance, which are of most interest to hotel operators and which are subject to the widest variations among the five systems.

It will be noted that the "window-box" unit is rated as the least expensive method of air conditioning on a number of points, but this unit has been almost universally vetoed because of its appearance, its short life (about a third that of other systems), and the frequent maintenance required.

Under "Economy of Installation" are included the necessary alterations incurred during installation, since these have a close influence on the total cost of installation. The revenue loss incurred during installation cannot be estimated, but it will obviously be roughly proportional to other alteration costs. The table includes approximate figures for the amount of floor space required, which applies only in cases where under-window units are used. This does not include the amount of space taken up by ductwork in the various systems.

Not included in the table are savings of space for ductwork and cost of operation. The former would depend on individual characteristics of the building—although in all cases the all-air high-velocity system presents an advantage in this respect. As regards operating costs, it has been stated that the cost of fan operation is higher in high-velocity systems, but present evidence would indicate that a properly designed high-velocity system can be operated as inexpensively as a low-velocity system. The high temperature differentials possible in a high-velocity system make it possible to substantially reduce the air quantities and consequently the cost of fan operation.

There is, generally speaking, no appreciable difference in the components between an all-air high-velocity system and a low-velocity system. Any component that has proved satisfactory in a low-velocity system should work equally well in high velocity. Equipment for heat transfer, humidity control, air cleaning, and, to a certain extent, automatic control, is the same.

One great advantage of high velocity over low velocity is the ease of balancing, as it is possible to balance more accurately and more easily an all-air high-velocity system than it is to balance a low-velocity system. The all-air high-velocity attenuator-diffuser unit has a calibrated pressure tap which enables the operator to select the air quantity desired by using a calibration chart and a screw driver for adjustment.

The all-air high-velocity air-conditioning system has given to the trade a new tool for better living through air conditioning. So far, the surface has only been scratched as regards the potential for this system. As the principles come to be more widely known, it is undeniable that increasing acceptance will follow.

NEPCODUCT adds electrical efficiency to lift slab construction of Ford Motor Company office building

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by Ben John Small

spec small talk

sculpturing by heat

From earliest times, Man has left to posterity permanent records of himself, and the most enduring of these are in stone. Ancient and modern edifices all testify to the great importance of the architect. Design and construction are his responsibility and frequently he specifies procedures to be used in fashioning stone. His goal is that all such structures shall be considered as ageless as time itself.

Now along comes Linde Air Products Company with a new concept of granite fashioning that basically is almost as old as Man himself. Some 50,000 years ago, he discovered how to produce fire and quite likely he noticed that local heat would flake and spall certain rocks. Later, translating this observation into practical application, he made his stone axes and hammers. At about this same time, he probably learned that by means of fire he could crack and break boulders. Thus, very early in his history, Man learned some constructive and destructive uses of fire. I guess every architect knows the ravaging effect of unleashed fire on granite columns and slabs, so when Linde said, "Let us use high temperature, high velocity flame on granite," it appeared they were flying in the face of Providence, and it was with a keen appreciation of all these aspects that the thermal texturing of granite by flame has been pursued with great caution and it seems to me utterly without fanfare. In thermal texturing, use is made of pure oxygen, a fuel gas which may be acetylene or propane, and water. While much work has been accomplished without using water, its use provides such excellent insurance against unwanted heat that Linde recommends water be employed in all thermal texturing applications otherwise believed impractical. The reason for the liberal use of water is that it is a better conductor of heat than is granite and so a granite slab may be recessed by repeated passes of the flame, and at the end of the operation be just as cool as before the operation commenced. Thermal texturing is brought about by the action of flame heat on the stone which it causes to spall off in controlled amounts. Only those particles which fly off are really hot, for the flame is passing over the stone too fast for heat to soak in and the cooling method assists greatly in preventing this happening. The appearance of all thermally textured granite has one thing in common. It is fresh and vibrant with the glint of the quartz, feldspar, biotite, and the like, quite undisturbed and always in evidence. The results must be seen to be appreciated fully. I seen 'em.

food-service consultant

The next time you worry your little head about the services of a food-service consultant perhaps you ought to turn to the following schedule of services. You should know that these services do not usually include traveling time and expenses from the consultant's home base. Also, make certain your consultant has a Valuable Papers Floater Insurance Policy for possible loss of, or damage to your precious drawings and magnificent specifications. Look here now.

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2. Preparing plan of equipment and roughing connections.
3. Assisting engineer in location of roughing and equipment capacities.
4. Preparing budget estimates.
5. Preparing specifications of all equipment.
6. Assisting in selection of bidders.
7. Assisting in receipt of bids and award of contract.
8. Checking contractor's roughing and detail drawings.
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The above rates do not include the cost of reproduction of drawings and specifications for bidding and contract purposes. All original copies of drawings and specifications shall become the property of the architect.

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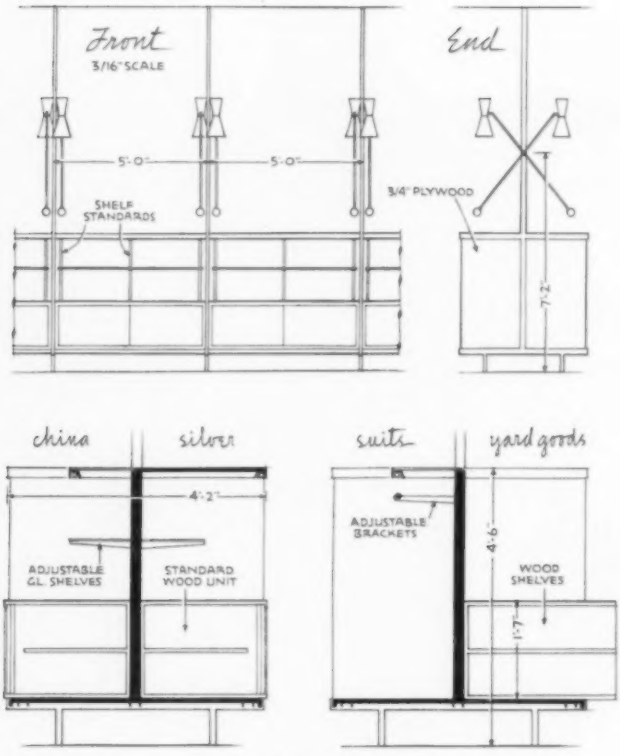
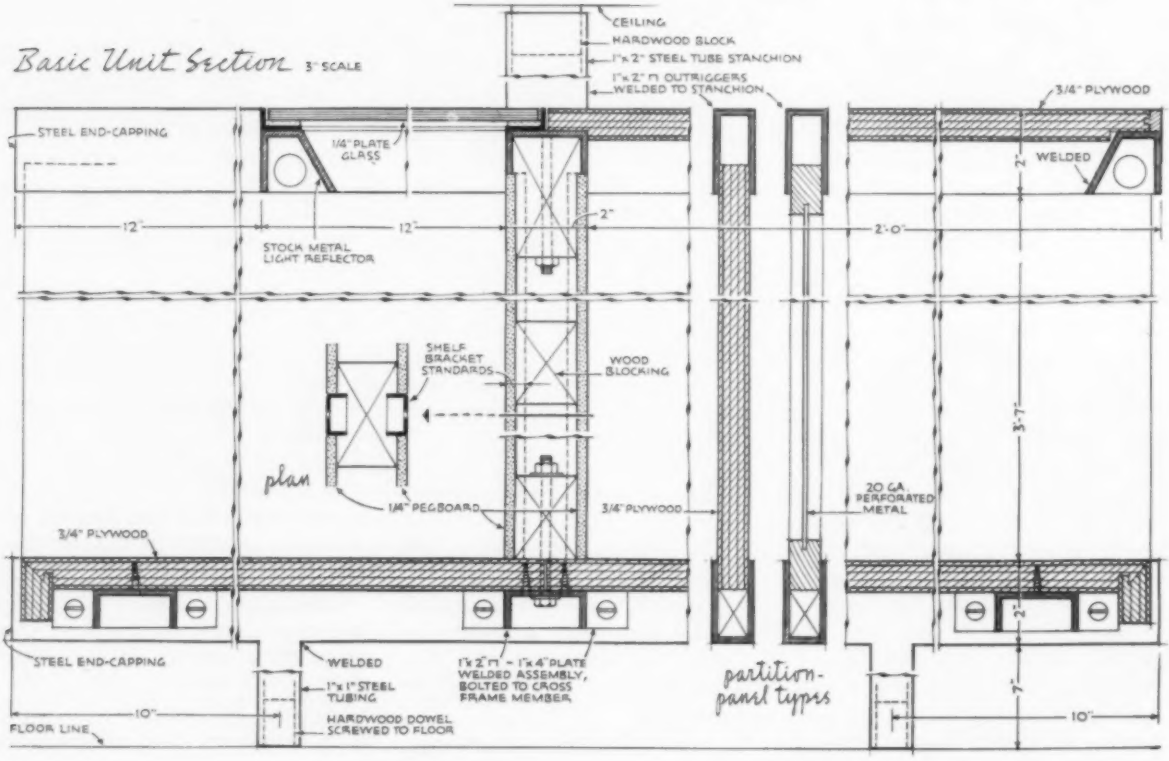
See how we worry about you!

display unit

ALEXANDRE GEORGES



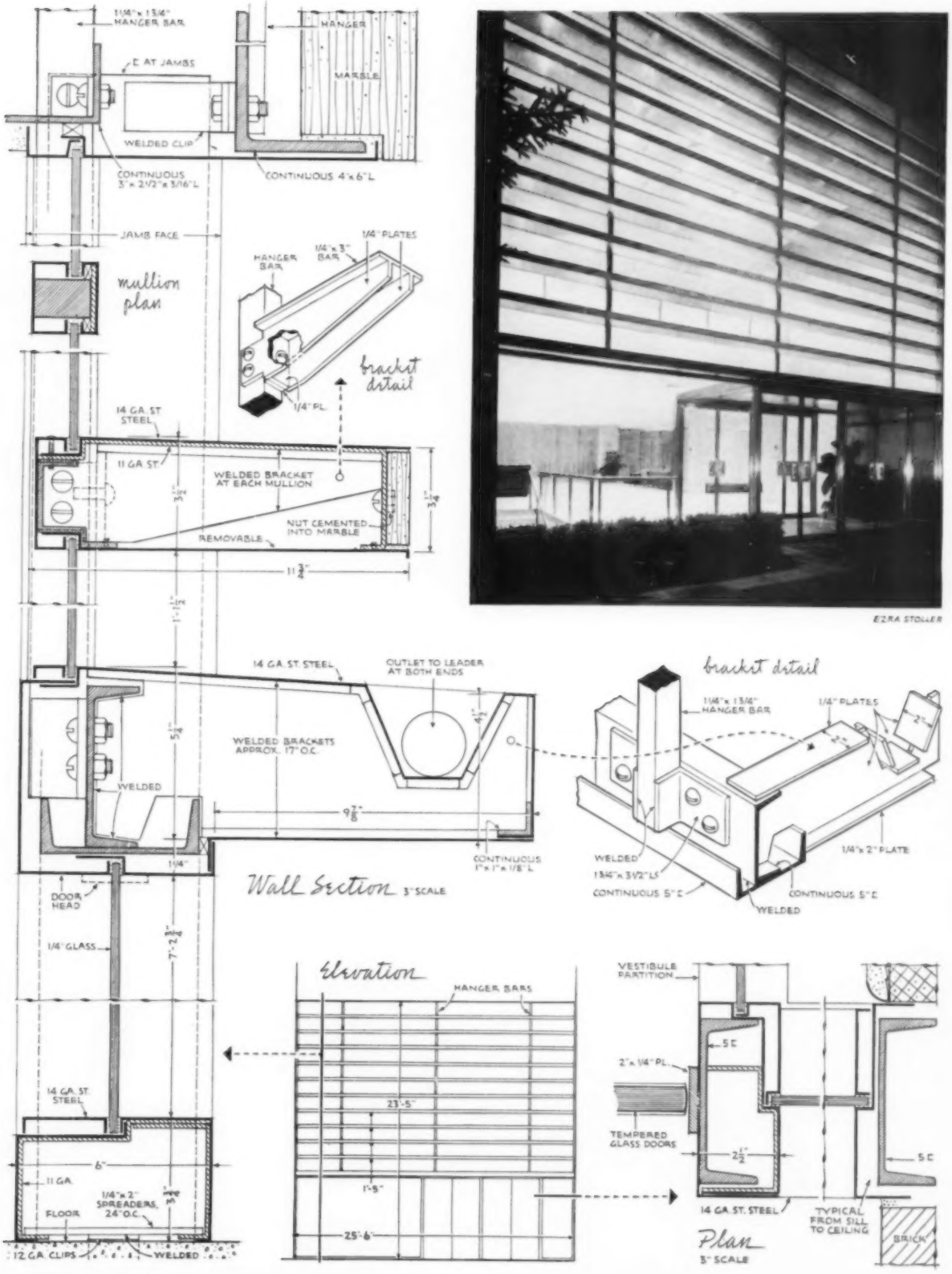
Typical Variations 3/8" SCALE



DEPARTMENT STORE, Langley Park, Md.

Meyer Katzman, Interior Architect

sun shade



EZRA STOLLER

OFFICE BUILDING, Greenville, S. C.

Carson & Lundin, Architects

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Raymond Jacobs

Madison Avenue showroom of International Designers Group, new distribution agency for the work of European and American designers and craftsmen. Glass shelving for display of accessories is supported by oiled birch poles, backed by unbleached raw silk. Paul Secon, Designer.

Louise Sloane

SHOWROOMS

Showmanship, taste, purposeful handling of space, informed and imaginative use of materials – all blend to provide the contemporary formula for effective showroom design. In the three examples we show this month, you will find them in generous supply.

Designer Edward Wormley, with Associate Edward Crouse, has utilized all of them in his distinguished sales offices for a Connecticut manufacturer of light- and voltage-control equipment. The space, in a New York office building, has been utilized to accommodate not only private offices and an equipment display but also a "one-room apartment" for demonstrating the company's dimmer control in a residential setting. Wormley has enriched the suite with fine textiles, beautiful woods, brilliant colors, and choice accessories – to create a sense of spaciousness and quality. Since light control is the "product" to be sold, each area uses a different lighting scheme, and each serves the double purpose of utility and product-demonstration.

Designer Eugene Tarnawa, in his showroom for a coat manufacturer, creates customer demand at the point of sale, by focusing attention on the merchandise in a setting that is colorful and lighthearted. Deft handling of partitions both segregates by price-lines and provides open display, while an ingenious device of notching the pipes on which the coats are hung permits full vision of tailoring details. Simple materials have been imaginatively used to give a (deceptively) costly look.

Architect Gerhard E. Karplus suggests the Northwestern origin of his sportswear manufacturer client in a New York showroom, by choosing such outdoor materials as driftwood, flagstone, sandblasted cypress, and brick. The setting is apt for display and sale of sportswear. A free-form plan makes maximum use of the relatively small space, to provide accommodation for sales booths, salesmen's desks, offices, and waiting area.

showrooms

client	Superior Electric Company
location	New York, New York
designer	Edward Wormley
associate	Edward Crouse

Photos: J. Alex Langley

general office

Entrance foyer leads to voltage-control-apparatus exhibit and offices beyond. To the right of the foyer, a residential apartment display demonstrates the multiple effects of the "Luxtrol" dimmer in a rich and handsome setting. White rectangle is projection screen for film demonstrations.

data

Design Theory: Three private offices, a general secretarial office, an industrial equipment display area, and a "one-room apartment" residential display area serve the requirements of the metropolitan sales staff of a Connecticut manufacturer, and at the same time demonstrate the company's light- and voltage-control apparatus.

Color Plan: General tone is muted, with some walls of paneled wood, others painted in retiring colors. Strong accents occur in floor and furniture. Vinyl-tile 27" squares, in emerald green, Bristol blue, and Flame, with cream-white for contrast, cover the floor. Upholstered furniture is in bold butter yellow, red-orange, lacquer red, Bristol blue, and a mixed weave of emerald green and Bristol blue; except for desk chairs, which are black.

residential display room

showrooms

Superior Electric Company (continued)

assistant manager's office

salesman's office

data

cabinetwork

Display: Rundbaken Displays Inc., 1125 Main St., E. Hartford, Conn.

windows

Blinds: Thru-Vu Vertical Blinds, Rye, N.Y.

furniture, fabrics

Furniture: Dunbar Furniture Corporation of Indiana, Berne, Ind.; Knoll Associates, 575 Madison Ave., New York, N.Y.

Fabrics: Cheney Greeff and Co., Port Chester, N.Y.; Jack Lenor Larsen, Inc., 36 E. 22 St., New York, N.Y.; Mauretania Fabrics, 838 West End Ave., New York, N.Y.; Rancocas Fabrics, Burlington, N.J.; Thaibok Fabrics, 3 E. 52 St., New York, N.Y.; Jofa, Inc., 45 E. 53 St., New York, N.Y.

lighting

Installed and Portable: all "Luxtrol" dimmer-controlled / Superior Electric Co., Bristol, Conn.; Century Lighting Inc., 521 W. 43 St., New York, N.Y.; Kliegl Bros., 321 W. 50 St., New York, N.Y.; Artcraft Lighting Co., Inc., 248 McKibbin St., Brooklyn, N.Y.; Design International, 6 E. 53 St., New York, N.Y.; Finnish-American Trading Corp., 41 E. 50 St., New York, N.Y.; Garden City Plating & Mfg. Co., 23 W. 47 St., New York, N.Y.; Lightolier, Inc., Jersey City, N.J.; Hansen, 978 First Ave., New York, N.Y.; Beacon Artisans, 330 E. 26 St., New York, N.Y.; Albert Hagmayer, 10 E. Goethe St., Chicago, Ill.

walls, ceiling, flooring

Walls: Eagle-Ottawa Leather Co., Grand Haven, Mich.; Murals, Inc., 16 E. 53 St., New York, N.Y.; Katzenbach & Warren, 575 Madison Ave., New York, N.Y.; Vermont Marble Co., 101 Park Ave., New York, N.Y.; Decorators' Showroom, 316 E. 47 St., New York, N.Y.

Ceiling: "Travertone"/ Armstrong Cork Co., Lancaster, Pa.

Floors: American Biltrite Rubber Co., Trenton, N.J.; Edward Fields Co., 509 Madison Ave., New York, N.Y.; Vermont Marble Co.

accessories

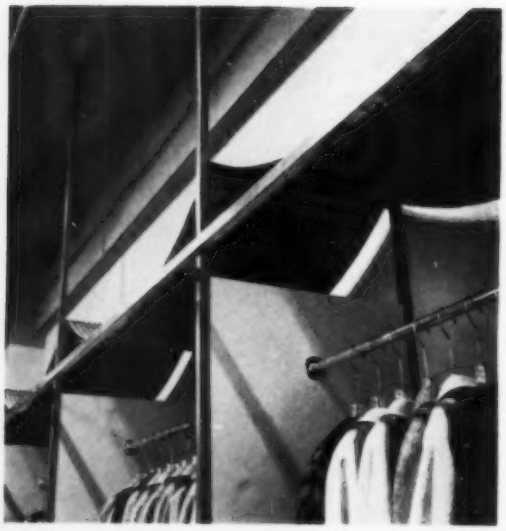
Desk Sets: Clark & Gibby, 20 E. 41 St., New York, N.Y.

Objets d'art: America House, 32 E. 52 St., New York, N. Y.; Bonnier's, 605 Madison Ave., New York, N.Y.; Peridot Gallery, 820 Madison Ave., New York, N.Y.; Betty Parsons Gallery, 15 E. 57 St., New York, N.Y.; Victoria Tree, 211 E. 49 St., New York, N.Y.

manager's office, two views

secretarial area

showrooms



client	Weatherbee Coats Inc.
location	New York, New York
designer	Eugene Tarnawa
associate	Robert Price

Photos: Marilyn Silverstone

data

Design Theory: Point-of-sale display in a moderate-priced coat showroom, accomplished by open booths, vivid colors, spotlighted merchandise.

Color Plan: Ceiling half blue, half purple. Sidewalls and dividers, apple green. Floors, gray. Aluminum horizontals, walnut basswood canopies.

partitions

Panels: plywood/ painted or papered.
Uprights: aluminum.
Canopies: walnut basswood/ Holland Shade Co., 999 Third Ave., New York 22, N.Y.

furniture

Tables: white "Formica" tops/ Allan Gould Designs, Inc., 166 Lexington Ave., New York, N.Y.

Chairs: white glass fiber/ designed by Charles Eames/ Herman Miller Furniture Co., Zeeland, Mich.

lighting

All: incandescent, to show true fabric colors/ Lightolier, Inc., Jersey City, N.J.

walls, ceiling, flooring

Walls, Ceiling: plaster, painted/ Martin Senour Co., 2520 S. Quarry, Chicago, Ill.

Carpet: mauve-gray/ Mohawk Carpet Mills, Amsterdam, N.Y.

Delivery Area Floor: hard-surface, to accommodate garment push-trucks/ Kentile Inc., 58 Second Ave., Brooklyn, N.Y.

data

Design Theory: Eastern showroom for Portland, Oregon, sportswear manufacturer called for rugged Northwest atmosphere, accomplished through choice of natural materials (driftwood, cypress, flagstone, brick). Relatively small space required to accommodate showroom, salesmen's room, waiting area, and offices, achieved through free-form plan.

Color Plan: Pastel walls (gray, white, yellow, cocoa) repeated in chair upholstery. Carpet mixture of brown, beige, white. Draperies mustard and orange on white.

cabinetwork

Divider-Storage: architect - designed/ Ebner Woodwork Co., 319 E. 64 St., New York, N.Y.

partitions

Materials: White "Formica," gray walnut, sandblasted cypress/ United States Plywood Co., 55 W. 44 St., New York, N.Y.

furniture, fabrics

Tables: White "Formica" tops, black wrought-iron bases/ architect-designed.

Chairs: Knoll Associates, 575 Madison Ave., New York, N.Y.

Upholstery Fabrics: Dan Cooper, 15 E. 53 St., New York, N.Y.

Draperies: "Summer-Silk"/ Laverne, 160 E. 57 St., New York, N.Y.

lighting

Recessed Plastic Squares: Kent Mfg. Co., 490 Johnson Ave., Brooklyn, N.Y.

Recessed Spotlights: Century Lighting Co., 521 W. 45 St., New York, N.Y.

ceiling, flooring

Furred Ceiling: "Rocklath" on furring channels/ United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

Acoustic Finish: "Travertone"/ Armstrong Cork Co., Lancaster, Pa.

Carpet: Oregon Flax Textiles, Salem, Ore.

Cork and Asphalt Tile: Armstrong Cork Co.

client | White Stag Mfg. Co.

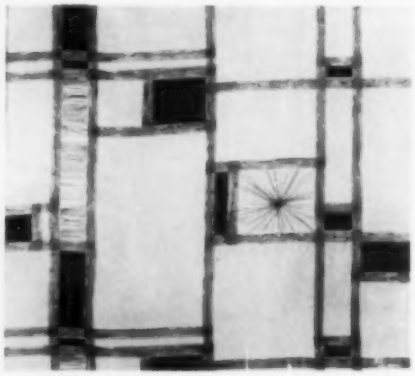
location | New York, New York

architect | Gerhard E. Karplus

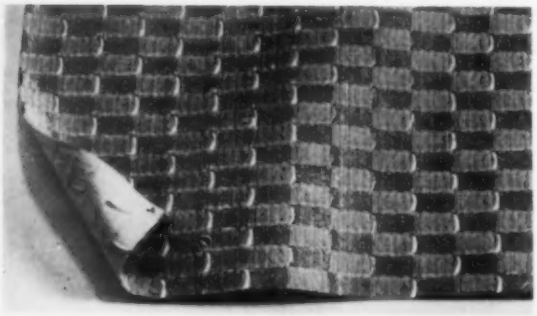
Photos: Ben Schnall

Velvet Wallpaper: "18 Carat"/ diamond-shaped flock motif/ 13" repeat/ hand-flocking on metallic ground/ 30" wide, 36 sq ft per roll/ **retail:** $16.50 per roll/ **Fine Art Wall Paper Co., 575 Madison Ave., New York 36, N. Y.**

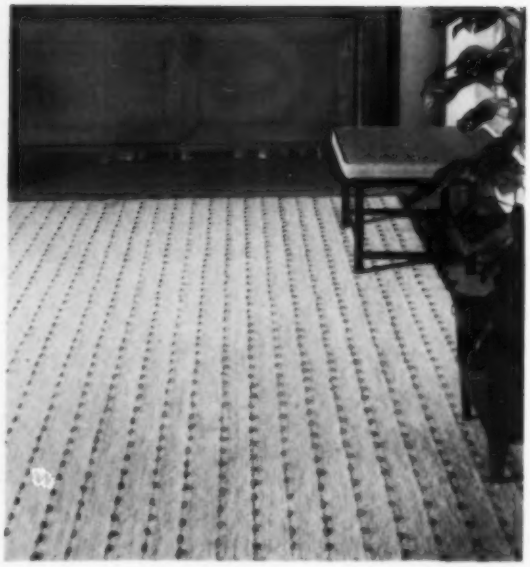
Linear Sheer: "Museum plaid" from "Executive Suite" collection of contemporary drapery sheers/ hand-printed on white Fiberglas/ 48" wide/ in olive-and-lacquer, black-and-mustard, red-and-blue, turquoise-and-olive, charcoal-and-yellow/ **Cheney, Greef & Co., Inc., 4 E. 53 St., New York 22, N. Y.**



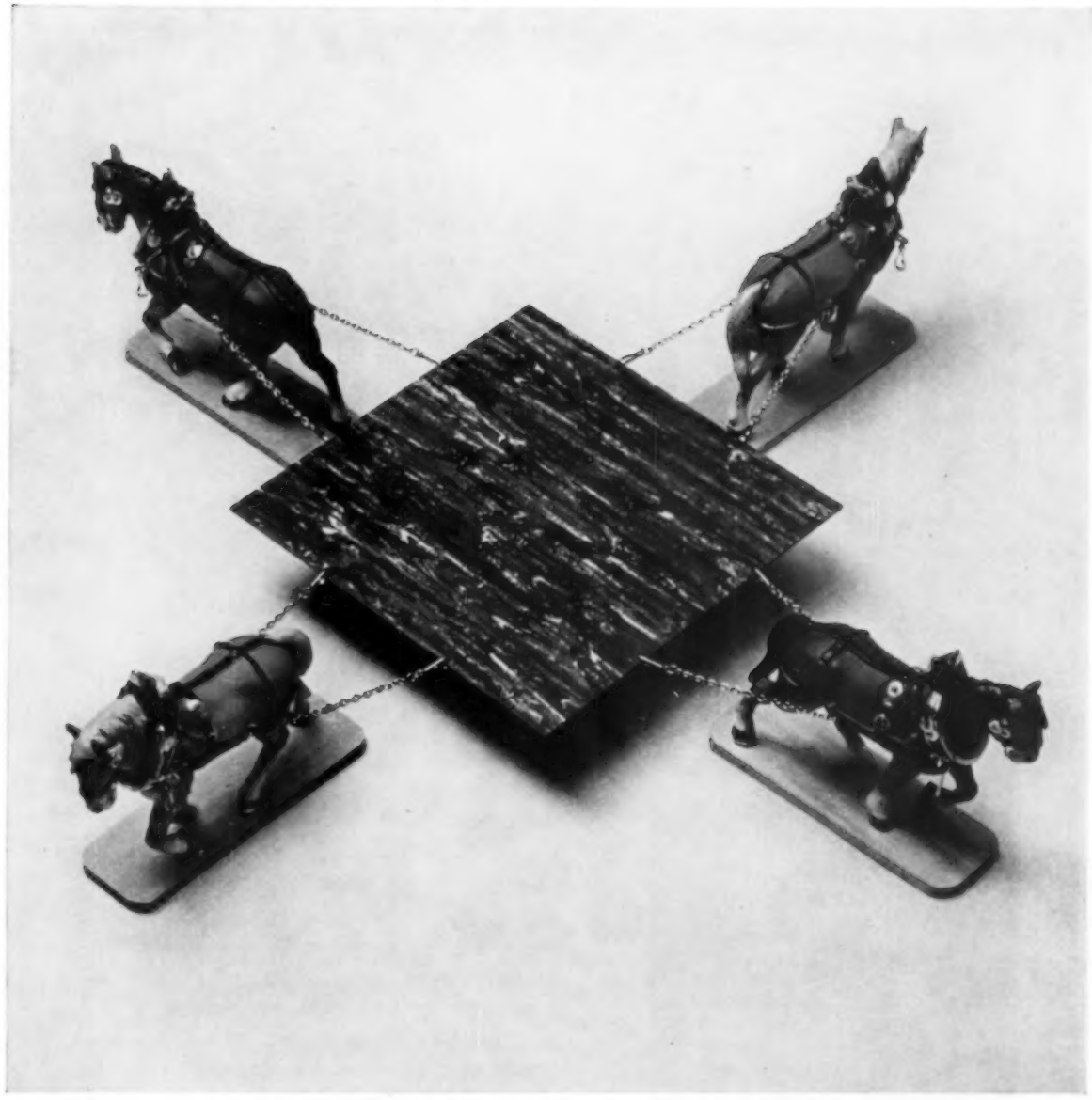
Planter-Divider: natural-birch or stained-walnut finish/ satin-brass supports/ 29 rungs/ mat-white metal containers in brass rings to hook over rungs/ 5½' high x 28" wide/ **retail:** $39.50 with 10 containers/ designed by George Nelson for Howard Miller Clock Co., available through: **Richards-Morgenthau & Co., 225 Fifth Ave., New York, N. Y.**



Wall Fabric: "Lustra-weve"/ shimmering pattern with satiny thread outlining alternating rectangles of duller surface weave/ washable, flame-retardant "Vicrtex"/ **L. E. Carpenter Co., Inc., Empire State Building, New York 1, N. Y.**



Area Rug: "Norland"/ thick high-and-low nubs forming irregular length-wise lines against a plied-rayon tufted background/ latex backing/ matching heavy fringe/ on a natural background, stripes of blue-gray and rose-beige; taupe and rose-beige; Aqua and Desert-beige; Spruce green and Pearl gray; gold and orange; ultramarine and Kelly green/ 2¼' x 4', 3' x 5', 4' x 6', 6' x 9'/ **retail:** $9.95 for 2¼' x 4' size/ **Cabin Crafts-Needletuft Rug Mills, Dalton, Ga.**



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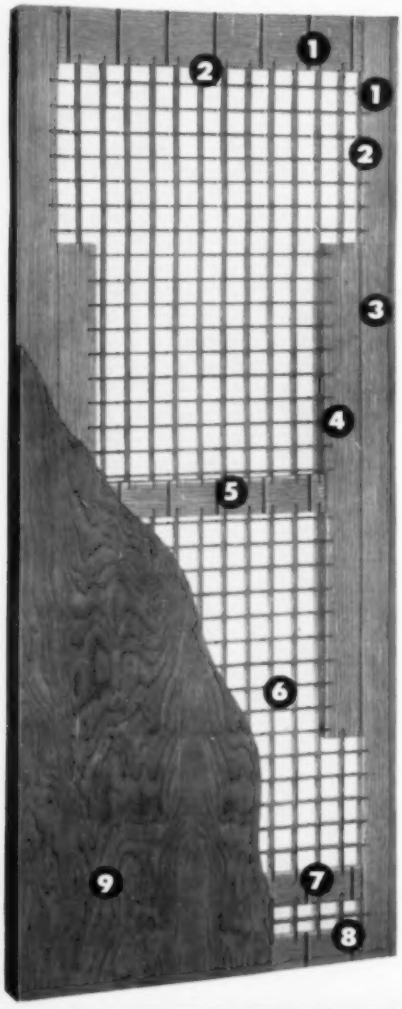
with air-vented, all-wood grid core



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1. One rail is 5" wide and can be used as either top or bottom of the door. Stiles are 3" (nom.).
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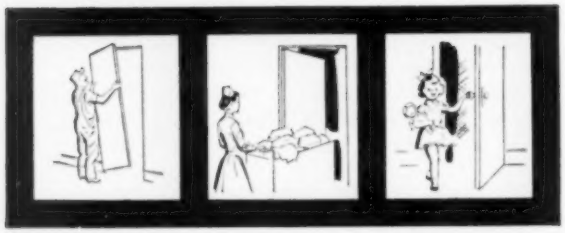
5. 3" rail for special hardware is 41" from bottom of door to top of rail unless otherwise specified.
6. Heavy duty 2" x 2" air cell all-wood gridwork interlocked for strength and dimensional stability.
7. 3" rail for kick plate located 10" from bottom of door to top of rail unless otherwise specified.
8. Vent grooves in top and bottom rails help keep moisture content in balance — prevent warpage.
9. Hand-matched hardwood face veneers, 3 ply, of any commercial species. Sanded to cabinetmaker's finish



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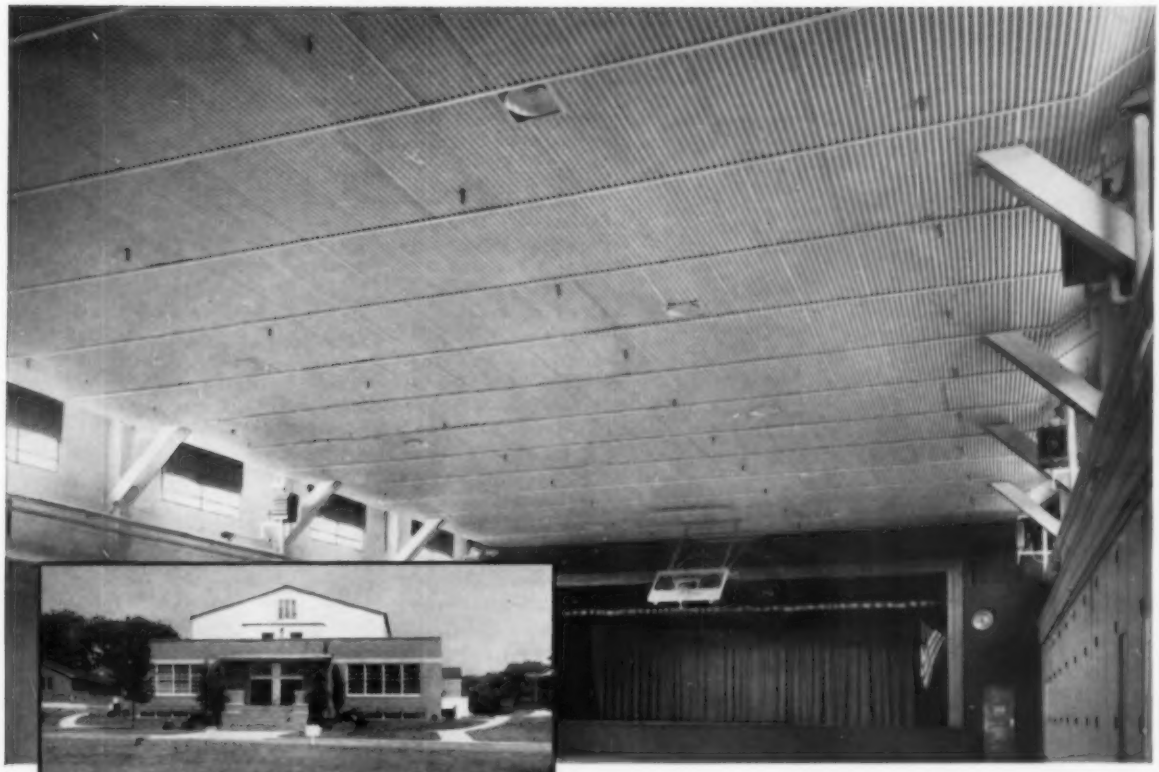

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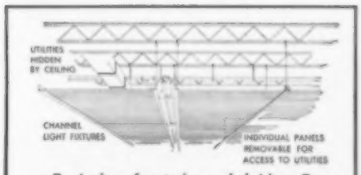

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p/a manufacturers' literature

Four publications (left) *have been awarded Certificates of Exceptional Merit —highest honors—in the annual competition for excellence in building-product literature co-sponsored by The Producers' Council and AIA. In Class I (literature presenting basic technical information on a type of product), top honors went to Acoustical Materials Association for* Sound Absorption Coefficients *and American Brass Company for* Modern Sheet Copper Practices; *in Class II (literature offering technical information on products of an individual manufacturer), to Armstrong Cork Company for* Technical Data for Architects and Engineers; *and in Class III (promotional literature), to Aluminum Company of America for* Architectural Achievements, *series of folders on outstanding buildings using aluminum building materials. Certificates of Merit and Honorable Mentions have been presented for 44 additional brochures, most of which have been reviewed here* L. G.

Editor's Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.

air and temperature control

148. Control of Direct Radiation (CA-12), 4-p. data sheet on design of proper control system for direct radiation. Discusses controls needed for steam and hot-water heating systems; describes both two-position and proportioning methods of control. Charts; graphs. Barber-Colman Co., Dept. 766, Rockford, Ill.

149. Carrier Modular Weathermaster Units, AIA 30-F-2 (36N-64), 28-p. brochure illustrating redesigned window units for high-induction air-conditionng system. Isometric drawings show modular construction of units; sketches suggest installation of units in new or existing buildings. Also decribes improvements in construction and performance of units; includes engineering data for design of system. Drawings; design tables; specifications. Carrier Corp., Syracuse, N. Y.

150. Automatic Coal Heat for the Nation's Schools, 68-p. manual demonstrating how coal—when used with modern equipment—can provide economical automatic heat. Six suggested boiler-room plans show efficient layouts for schools with requirements ranging from 3000 to 60,000 sq ft steam radiation; market study of coal installations in 20 schools tabulates savings in fuel costs. Photos, drawings; description of equipment and controls. Market Promotion Dept., National Coal Assn., 802 Southern Bldg., Washington 5, D. C.

151. Rittling Baseboard Radiation, AIA 30-C-44 (BB-56), 12-p. catalog on baseboard convectors. Shows two types of heating elements—double-row copper tubing with corrugated aluminum fins and single copper tube with steel fins; illustrates standard prefab covers as well as snap-on type for custom installations. Provides engineering data for design of radiation system; gives charts of hot-water ratings and flow data. Photos; drawings; dimensions. The Rittling Corp., Rittling Bldg., Buffalo 5, N. Y.

★ **Trane Refrigeration Manual** (3rd Ed.), 148-p. technical manual revised to include new developments in air-conditioning systems. Intended as handbook on installation, service and maintenance of refrigeration equipment, manual describes each component of air-conditioning system and its controls; also explains design of refrigeration and water piping. Discusses testing of completed installation; outlines procedure for placing system in operation; tabulates common complaints with probable causes. Drawings; charts; glossary of terms. Available only on direct application to The Trane Co., La Crosse, Wis. $1.50.

152. Flexi-Cool Units (C-1100-S-105), 4-p. folder containing information on packaged central-system air-conditioning units. Outlines special features of unit suitable for wide range of residential and commercial installations. Shows how conditioner can be mounted on floor or ceiling; can circulate air directly or through duct system; and can be assembled complete or installed in separate sections tailored to meet individual space requirements. Drawings; specifications. Worthington Corp., Harrison, N. J.

construction

200. Alcoa Aluminum in Architecture, AIA 15-J, 8-p. guide for selection and specification of aluminum alloys. Tabulates data for selection of alloys on appearance basis; outlines description and recommended uses for aluminum surface finishes. Chart of architectural-aluminum colors; suggested specifications. Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa.

Timber Foundation Piles, 68-p. handbook on pressure-treated piles. Explains advantages of treated-wood piling for foundations, bridges, and other heavy construction loads; contains pile-driving formulas, means for determining safe loads, and methods of solving problems of uplift or lateral forces. Includes ASTM specifications for selection of timber piles; gives American Wood Preservers' Association standards for preservative treatment. Photos; charts. Available only to architects and engineers on direct application to American Wood Preservers' Inst., 111 W. Washington St., Chicago 2, Ill.

201. Larson Preformed Waterproofing Units, 4-p. folder containing information on preformed units for waterproofing exterior masonry walls. Describes installation of units to form complete membrane extending from foundation to roof; shows typical details for waterproofing walls, parapets, and columns. Drawings; specifications. The Brisk Waterproofing Co., Inc., 103 Park Ave., New York 17, N. Y.

202. Butler Buildings, AIA 17-A (1375), 16-p. brochure featuring prefab rigid-frame buildings. Illustrates completely pre-engineered structures for factory use; shows several architect-designed buildings utilizing prefab framework. Contains information on basic designs; gives data on doors, windows, and insulation for prefab buildings. Butler Mfg. Co., 7400 E. 13 St., Kansas City 26, Mo.

★ **Fine Hardwoods Selectorama,** AIA 19-E-5, 60-p. manual on selection and application of fine hardwoods. Presents geographical sources, colors, patterns, characteristics, and price ranges of more than 400 commercially available hardwoods; all entries are cross referenced under names by which they are known in different regions. Illustrates methods of matching veneers to obtain distinctive effects with wood; also discusses recent developments in wood finishes and plywoods. Photos; charts. Available only on direct application to Fine Hardwoods Assn., 666 Lake Shore Drive, Chicago 11, Ill. $1.50.

203. Cofar Product Manual, AIA 4-E-4 (BCo-565), 20-p. technical manual on corrugated, high-strength, galvanized-steel

sheet with transverse reinforcing wires attached. Explains advantages of material which serves as permanent formwork for concrete, acts as positive and temperature reinforcing, and may be used as finished ceiling. Design section gives step-by-step procedure, including examples and tables; details show placement of negative reinforcement where needed, attachment to structural frame, and installation of electrical underfloor duct. Drawings; specifications. Granco Steel Products Co., 6506 N. Broadway, P. O. Box 2, Baden Station, St. Louis 15, Mo.

204. New-Concept Curtain Wall, 4-p. folder featuring field-assembled, insulated curtain wall. Reviews advantages of curtain wall assembled on job site; describes installation of wall—consisting of interior corrugated sheet, glass-fiber insulation, and ribbed embossed exterior sheet—with special power-driven fasteners. Drawings. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, Ohio.

205. Kaiser Aluminum Products, 24-p. catalog containing information on properties and applications of aluminum materials. Gives general data on characteristics, fabrication, and finishing of aluminum; tabulates physical properties of extrusions, wires, rods, sheet, plate, castings, and forgings. Photos; charts. Industrial Service Div., Kaiser Aluminum & Chemical Corp., 1924 Broadway, Oakland 12, Calif.

206. Thulman Fireplace, AIA 5-H, 8-p. pamphlet presenting prefab, all-metal fireplace for use in dry-wall construction. Drawings show installation of preassembled unit which needs no footings, masonry, or bracing; details indicate framing of structure around fireplace. Photos of actual installations show variety of design treatments possible. The Majestic Co., Inc., Huntington, Ind.

Exterior Masonry Construction, 76-p. booklet by Walter C. Voss, formerly of MIT's Dept. of Building Engineering and Construction. Discusses fundamentals of sound, watertight masonry construction; explains influence of mortar, masonry units, design, and workmanship on masonry; describes effects of weather on exterior masonry surfaces. Includes data on recommended construction practices; photos; tables. Available only on direct application to National Lime Assn., 925 15 St., N. W., Washington 5, D. C.

207. Fireproofing With Perlite, AIA 21-C-1 (6), 8-p. guide for use of lightweight insulating aggregate in concrete and plaster. Contains recommended basic details for 38 fire-retardant constructions; gives description of construction and fire ratings for each. Provides data on physical properties; outlines advantages of lightweight aggregates. Photos; drawings. Perlite Inst., 45 W. 45 St., New York 36, N. Y.

208. PD Roofing and Siding Nuts (168), 4-p. folder describing zinc-alloy nuts for fastening flat and corrugated siding materials. Illustrates nut with special synthetic-rubber bushing to provide watertight seal; shows use with welded studs, power-driven studs, toggle-bolt assemblies, and steel-hanger screws. Drawings; dimensions; specifications. Precision Devices, Inc., 142 Liberty St., New York 6, N. Y.

209. Robertson Long-Span Q-Deck, AIA 13-H, 8-p.

210. Robertson Long-Span Q-Deck for Modern School Construction, AIA 14-I, 6-p.

Two bulletins on steel roof deck designed especially for long unsupported spans. First booklet describes properties of cellular-steel decking; includes load tables, typical details, and specifications. Second booklet describes advantages of roof deck for school construction; shows integration of lighting system, acoustical treatment, and insulation with steel deck. Photos; drawings. H. H. Robertson Co., 2400 Farmers Bank Bldg., Pittsburgh 22, Pa.

211. How to Work With High-Strength Bolts (HS-1), 20-p. booklet containing information on high-strength, carbon-steel bolts. Explains theory of high-strength bolting; outlines recommended installation practices with hand or power wrenches. Tables give recommended torques for tightening bolts, proper washer sizes, and ordering instructions. Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N. Y.

212. Kindorf Channel Fittings, Hangers, and Supports, 106-p. manual on supports for piping and electrical fixtures. Illustrates equipment used to suspend multiple and single runs of conduit; shows supports for fluorescent-lighting systems. Also contains data on steel framing for storage racks. Tables of section properties and loading, conduit spacing, and standard pipe dimensions. The Kindorf Co., Div. of Steel City Electric Co., 1209 Columbus Ave., Pittsburgh 33, Pa.

213. Stran-Steel Structural Systems, 24-p. catalog on lightweight steel-framing system. Shows joists, studs, and channels specially formed to permit nailing; gives data on cold-formed-steel columns and beams; presents new line of metal curtain-wall panels for insulated or uninsulated assemblies. Outlines design procedure, including formulas and sample problems; gives section-property tables. Drawings; details; specifications. Stran-Steel Corp., Ecorse, Detroit 29, Mich.

214. Townsend Tuff-Tite Fasteners (TL-107), 4-p. circular outlining advantages of screw-type fastener for use with roofing and siding materials. Describes one-piece metal fastener with synthetic-rubber washer, which provides watertight, noiseless connection; gives recommendations for location of fasteners, torque settings, and proper-size fastening tools to use. Drawings; specifications. Townsend Co., Box 237-2, New Brighton, Pa.

doors and windows

354. Vanco Domelites, AIA 12-J, 8-p. publication illustrating plastic-domed skylights. Describes construction of aluminum and copper-framed domes; shows domes set in round or square frames. Also illustrates double-paned skylight for better insulation; shows unit with provisions for natural ventilation. Photos, specifications, and dimensions for each model. E. Van Noorden Co., 100 Magazine St., Boston 19, Mass.

355. Wooster Metal Doors & Frames, 10-p. brochure on hollow-steel interior and exterior doors with hot-rolled-steel frames. Illustrates stock designs for standard and heavy-duty doors; shows standard frame sections. Also contains data on hollow-metal sliding doors and frames for closets. Specifications; installation details. United Steel Fabricators Inc., Wooster, Ohio.

356. International Doors for Industry, 8-p. booklet giving information on custom-built industrial doors. Features guide for selection of proper door type; describes operation of vertical-lift, turnover, crane, and vertical-lift pier doors. Drawings; specifications; photos of recent installations. Marketing Services Div., International Steel Co., Evansville, Ind.

(Continued on page 146)

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N. Y. **I should like a copy of each piece of Manufacturers' Literature circled. We request students to send their inquiries directly to the manufacturers.**

148	205	354	442
149	206	355	443
150	207	356	444
151	208	357	445
152	209	358	446
200	210	359	447
201	211	360	619
202	212	361	620
203	213	440	48
204	214	441	49

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why invite FIRE?
KEYMESH lath for overall reinforcement. Made of galvanized woven wire. Especially recommended for ceiling construction.
KEYCORNER strip lath, preformed to fit snugly in corners. Lies flat when applied to joints. Galvanized to prevent rust streaks.
KEYBEAD corner lath with precision formed bead for outside corners. Open mesh assures strong, solid plaster corners.

you multiply fire resistance for pennies per square foot with

KEYMESH

Some types of walls and ceilings invite fire.

When you use lath and plaster, plus KEYMESH, you cut fire hazard immeasurably. Just compare the difference.

With frame construction, a ceiling with exposed joists is gone in 15 minutes. Finished with gypsum lath, lightweight aggregate plaster and Keymesh, it stands up an hour and 38½ minutes.

With open web steel joists, the ceiling fails in 7 minutes when joists are exposed. Add gypsum lath and 1″ of lightweight aggregate plaster over KEYMESH and the ultimate fire resistance is 4 hrs. and 26 min.

With most types of light construction you'll find that lath and plaster with KEYMESH reinforcement can make the difference between "heavy loss" and "light damage" to buildings. You can do this at negligible cost . . . for pennies per square foot of finished surfaces.

Firesafety is not the only advantage of using KEYMESH reinforcing lath. Beauty, durability, and economy must be part of everything you design. With Keymesh you get all these plus other important advantages for your clients such as lower insurance rates and complete adaptability for any type of decoration.

Before you specify or build again, weigh these facts.

Fire Test Results on various types of construction by authoritative Testing Laboratories

CEILING CONSTRUCTION WOOD JOIST FLOORS	ULTIMATE FIRE RESISTANCE	PROTECTION OF JOISTS
Exposed joists.	15 min.	None
Gypsum wallboard ½″ thick finished with casein paint.	25 min.	15 min.
Gypsum lath, ½-in. of gypsum lightweight aggregate plaster reinforced with **KEYMESH**-type reinforcing lath.	1 hr. 38½ min.	36 min.

WALL CONSTRUCTION ON WOOD FRAMING	ULTIMATE FIRE RESISTANCE
½″ fiberboard.	5 min.
Metal lath with ¾-in. sanded gypsum plaster.	15 min.
Tongue-and-grooved wood.	20 min.
⅜-in. perforated gypsum lath with ½-in. sanded gypsum plaster.	30 min.

CEILING CONSTRUCTION STEEL JOIST FLOORS	ULTIMATE FIRE RESISTANCE
Ceiling unprotected.	7 min.
Ceiling of gypsum lath and ½″ lightweight aggregate gypsum plaster.	55 min.
⅜″ gypsum lath covered with 1⅛″ of gypsum plaster with lightweight aggregate.	1 hr. 43 min.
Gypsum lath and ½-in. gypsum plaster with lightweight aggregate reinforced with **KEYMESH**-type galvanized reinforcing lath.	3 hrs. 28 min.
⅜″ gypsum lath, reinforced with 20-gauge, 1″ **KEYMESH**-type lath; then covered with only 1″ of lightweight aggregate gypsum plaster.	4 hrs. 26 min.

STEEL COLUMNS	ULTIMATE FIRE RESISTANCE
Structural Steel, unprotected 10 sq. in. min. area of steel.	15 min.
Gypsum lath, one layer, ⅜″ perforated, ½-in. gypsum plaster mixed with lightweight aggregate.	1 hr.
One layer ⅜-in. perforated gypsum lath, 1-in. thickness of gypsum plaster, 100 scratch, 100 brown, mixed with lightweight aggregate.	2 hrs.
Two layers ½-in. long-length gypsum lath, 1½-in. gypsum plaster mixed with lightweight aggregate. *Lath wrapped with one layer 20 gauge galvanized 1-in.* **KEYMESH**-*type reinforcing lath.*	4 hrs.

KEYSTONE STEEL & WIRE COMPANY

Peoria 7, Illinois

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KEYSTONE NAILS • KEYSTONE TIE WIRE
KEYSTONE NON-CLIMBABLE AND ORNAMENTAL FENCE

Keymesh is a registered Trademark of the Keystone Steel & Wire Company

p/a manufacturers' literature

(Continued from page 143)

357. Owens-Illinois Glass Block, ★ AIA 10-F, 24-p. bulletin explaining importance of glass blocks for functional control of daylight. Describes properties of several types of light-directing light-diffusing, solar-selecting, and non-sun-exposure blocks; gives drawings as well as dimensions for each block. Features eight pages of typical details showing glass-block panels in steel, wood, or masonry construction. Design charts; specifications. The Kimble Glass Co., Toledo 1, Ohio.

358. Lemlar Jalousies, AIA 35-P-2, 20-p. brochure on sun-control equipment. Explains value of adjustable jalousies for control of heat as well as light; describes jalousies designed especially for darkening of audio-visual schoolrooms. Also includes data on stationary louvers and sun canopies. Photos; details; specifications. Lemlar Mfg. Co., P. O. Box 352, Gardena, Calif.

359. Marcolite Skylights, AIA 12-J, 8-p. pamphlet on aluminum-framed glass-fiber-panel skylights. Describes features of construction; illustrates units with self-contained curb and roof flange in addition to models for use over building curbs. Also contains information on ventilating skylights, fire vents, and roof-scuttles. Details; dimensions; specifications. The Marco Co., 45 Greenwood Ave., E. Orange, N. J.

360. Mississippi Glass, AIA 26-A (56-G), 20-p. booklet giving data on glass for light diffusion, decoration, protection, and heat absorption. Lists types of glass for each purpose; includes photos, physical properties, and dimension of each type. Installation photos; details; specifications. Mississippi Glass Co., 88 Angelica St., St. Louis 7, Mo.

361. Sterling Hardware, AIA 27-A (19), 24-p. catalog on hardware for sliding doors. Covers hardware for by-passing doors, pocket doors, heavy-duty interior doors, and doors that slide along wall; also shows locks and finish hardware for each door. Includes data on prefab pocket-door frame; gives information on operators and extension hinges for casement windows. Drawings, details, description for each. John Sterling Corp., 2345 W. Nelson St., Chicago 18, Ill.

electrical equipment, lighting

440. Globe Lighting, AIA 31-F-23, 16-p. brochure presenting line of contemporary-styled lighting fixtures suitable for residential and commercial lighting. Includes several hanging fixtures, some with polished-brass shades; also illustrates many types of wall lamps. Gives description of materials and dimensions for each fixture. Globe Lighting Products, 1710 Flushing Ave., Brooklyn 37, N. Y.

441. Thin-Lite Troffers, 4-p. circular featuring three extra-thin lighting fixtures designed to save space when ceiling height is limited. Shows unit with one-piece polystyrene louver panel; with flat-glass lens; and with ⅛" formed-acrylic diffuser. Dimensions; drawings; data on installation of fixtures in plaster, furred-wood, and metal-frame ceiling constructions. Lighting Products Inc., Highland Park, Ill.

442. Curtis Fluorescent and Incandescent Lighting, AIA 31-F-2, 8-p. catalog of condensed data on lighting fixtures. Gives basic information on fluorescent luminaires and troffers; describes indirect luminaires, reflectors, and recessed units for incandescent lamps. Also contains data on hangers for fluorescent fixtures. Curtis Lighting, Inc., 6135 W. 65 St., Chicago 38, Ill.

443. Better Lighting With Du Pont Lucite Acrylic Resin (A-737), 12-p. brochure outlining advantages of acrylic resin as light-transmitting material. Suggests application of plastic material in luminous ceilings, low-brightness lenses, cove lighting, and highway lighting. Comprehensive tables provide physical properties, spectrophotometric data, and light-transmittance and light-reflectance values. Polychemicals

(Continued on page 150)

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For more than 30 years, Cipco has put into each and every order, each and every job, those unseen things that result in customer satisfaction. Users have come to know and expect Cipco to be more than just good hardware.

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"Gold Bond's **Holostud** Wall System helped us build this school...at $11.50 per. sq. ft."

Says: **Rolf C. Dreyer,** *Architect, Poughkeepsie, New York*

The new $3,000,000 Poughkeepsie High School is one of the most functional and beautifully designed school buildings in New York's Hudson Valley.

"The savings that we can effect using a non-load bearing partition like Gold Bond's Holostud Wall System," says Mr. Dreyer, "are important in these days of low-cost school building. We even noted in our specifications, for the benefit of the mechanical and electrical contractors, that this system speeded up their work and simplified their layout. Also in our steel joist floor system, we realized a slight saving through omitting the additional joist we usually insert under interior partitions. We believe the contractors realize the advantages to be gained by using this system and this would surely show in the low cost of $11.50 per square foot under which we awarded contracts."

Plastering contractor likes it, too!

Gold Bond has made real progress with their new Holostud Wall System," says Mr. Gallante, plastering contractor. "It's one of the finest advances in the metal lathing industry in years.

"The Holostud System takes all the guess work out of non-load bearing partitions. We find it sturdy, economical, speedily erected and solves the problem of concealed pipes, ducts and electrical conduits."

Versatile Holostud Systems may be used with either metal or gypsum lath application. For complete technical data write the National Gypsum Company, Buffalo 2, New York.

Architect: Rolf C Dreyer, Poughkeepsie; (center and right) *Lath and Plastering Contractors:* Gus Gallante, President, and Charles Sendra, Hudson Valley Plastering & Lathing Co., Inc., Poughkeepsie; *General Contractor:* John W. Rouse Construction Corp., Gouverneur, New York

HOLOSTUD PARTITION SYSTEM

NATIONAL GYPSUM COMPANY

Gold Bond®
BUILDING PRODUCTS

Air conditioning keeps indoor climate clean, fresh, temperature-perfect at Norwich Pharmacal laboratory.

His comfort helps research improve your health

Here's how American Blower air conditioning equipment controls the climate in one of America's most modern research centers

Having developed such antimicrobial agents as the nitrofurans – widely used in the treatment of both human and animal diseases, and comparable to the sulfonamides and antibiotics – the Norwich Pharmacal Company promises even greater aids to healthful living through improved research at its new Melvin C. Eaton Laboratory, Norwich, N. Y.

Here, American Blower air conditioning equipment assures ideal working comfort in offices and laboratories . . . eliminates variable temperatures in research projects.

For example, in work with rabbits – which are affected by fluctuations in heating or cooling – temperature changes could distort the results of many months' research. *Temperatures in the laboratory never vary more than one degree.*

Norwich's chief engineer, Wm. Agnew, adds: "Our American Blower equipment not only provides dependable, quiet air conditioning, it also does an excellent job of dust filtering – essential in keeping test tubes, test plates uncontaminated."

If your plans include air conditioning, it will pay you to talk to an American Blower sales engineer. Just call our nearest branch office. American Blower Corporation, Detroit 32, Michigan; Canadian Sirocco Company, Ltd., Windsor, Ontario.

In addition to equipment for complete central systems, American Blower offers packaged air conditioners for offices, stores, small industrial plants and similar applications.

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MODERN STYLING
WITH REAL SALES APPEAL

The Lindsay open front model—permitting installation in narrow 16-inch counter tops—is the newest and most practical thing in built-in lavatory design. Stainless steel union strips.

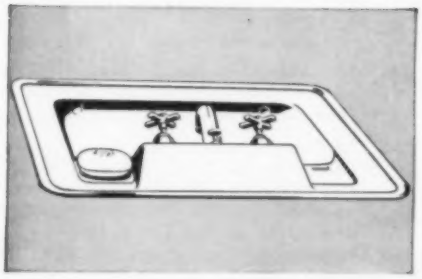
The Deluxe Lowell lavatory is the finest of flat rim models which are so popular for single or twin counter-top installation. Preformed, stainless-steel mouldings assure tight, leak-proof fit.

Modern living calls for smartly styled, functionally designed lavatories — and PLENTY OF THEM for family needs.

Here are three Beautyware models which can improve your bathroom installations. All three offer superior quality, durability and color processing.

Scientific design and manufacture of all Beautyware lavatories assure accurate and simplified installation — trouble-free, long-life operation. Gleaming, easy-to-clean finishes — precision brass fittings — and choice of five distinctive nature colors — are all strong selling features.

The Whittier is typical of the many Beautyware wall-mounted models available in shelf-back, ledge-back or slant-back design. Optional legs and towel bars require no special wall attachments—are simply installed.



Convenience Features such as soap-space, concealed overflows and anti-splash rim contribute greatly to the value of Beautyware lavatories.

BRIGGS *Beautyware*

BRIGGS MANUFACTURING CO., 300 Buhl Building • Detroit 26, Michigan

p/a manufacturers' literature

(Continued from page 146)

Dept., E. I. du Pont de Nemours & Co., Wilmington 98, Del.

444. Duro-Test Incandescent, Fluorescent, Electronic, 32-p. booklet on lamps. Describes manufacture of fluorescent lamps developed to give extra-long life; contains data on fluorescent lamps designed for special functions. Gives information on general-purpose incandescent lamps as well as those engineered for special applications such as sports lighting, street lighting, and colored signs. Also includes material on starters for lamps. Duro-Test Corp., North Bergen, N. J.

445. Finland House Lighting, 32-p. catalog of lighting fixtures designed by Finnish Designer, Paavo Tynell. Illustrates many pendant, multiple-lamp, and surface-mounted fixtures; shows adjustable fixtures as well as table and floor lamps. Drawings; dimensions; descriptions of materials; data on custom lighting designs. Finland House Lighting, 41 E. 50 St., New York 12, N. Y.

446. Ballasts for Fluorescent Lamps (GEC-983G), 12-p. guide for selection of fluorescent-lamp ballasts. Provides data on ballasts for standard fluorescents, outdoor applications, dimming and flashing, and germicidal lamps; gives performance charts and dimensions for each ballast. Also contains wiring diagrams for ballasting circuits; includes description of ballast housings. General Electric Co., Schenectady 5, N. Y.

447. Better Lighting for Bigger Sales in Hardware Stores, 12-p. brochure presenting suggestions for lighting of hardware stores. Reviews factors to consider in designing lighting system, such as store location, merchandise, flexibility, and economy; outlines suitable types of fixtures and their proper applications; discusses special lighting in wall cases, storefronts, and window boxes. Chart of recommended lighting levels for hardware stores; suggested floor plan for quick-service-type store; drawings. Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.

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NO-COST EXTRAS *that others charge for*
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insulation (thermal, acoustical)

619. Sealtight Products, 8-p. booklet presenting data on materials for vapor seal and perimeter insulation. Describes semi-rigid asphalt-core membrane for use as vapor barrier; gives information on perimeter insulation formed of asphalt-impregnated cork granules. Details show installation of materials in slab-on-grade construction, crawl space, and under-slab ducts; also recommends use of insulation as resilient corewall and deck in masonry construction. Drawings; specifications. W. R. Meadows, Inc., 4 Kimball St., Elgin, Ill.

620. Tectum Sidewall Insulation Panels, AIA 37-B-1, 4-p. folder describing wood-fiber panels suitable for exterior-wall insulation and for acoustical treatment in industrial or commercial buildings. Drawings; data on fastening methods; physical properties. Tectum Div., Peoples Research & Mfg. Co., 105 S. Sixth St., Newark, Ohio.

interior furnishings

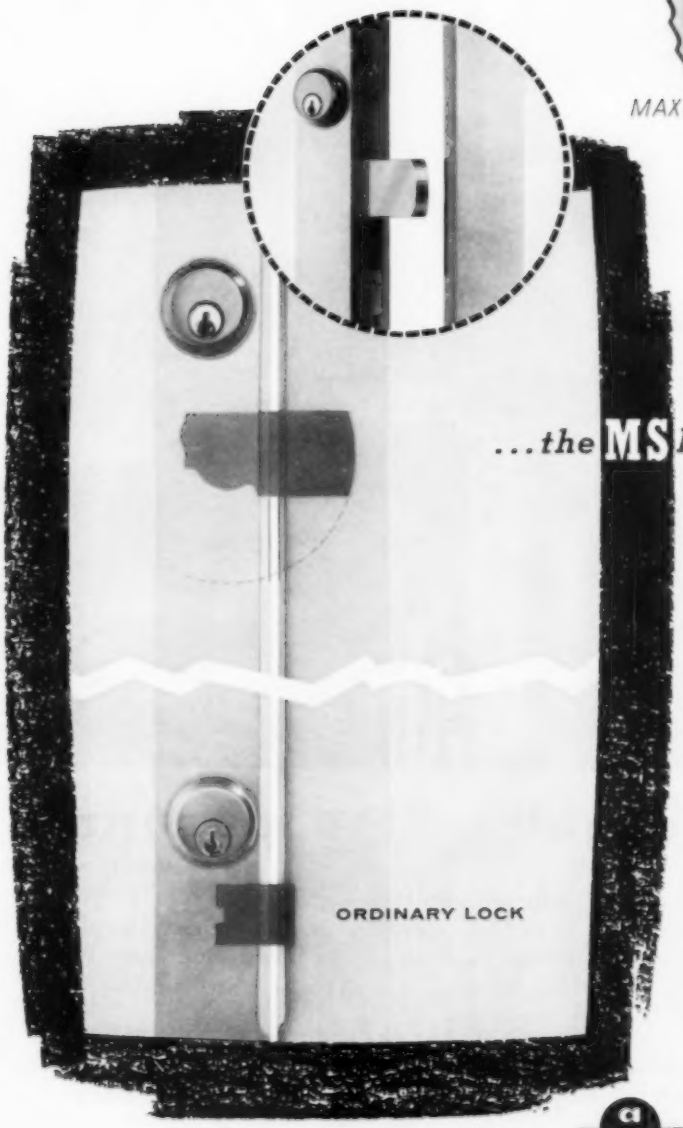
48. Contemporary Home Designed Around the Kitchen: by A. Quincy Jones and Frederick E. Emmons (3).

49. Contemporary Home Designed Around the Kitchen: by Carl Koch (4). Two portfolios enclosing photos of homes especially planned to emphasize importance of the kitchen. Design by Jones and Emmons features open-plan kitchen arranged around island containing sink and dish washer; kitchen and adjoining dining area open to outdoor terrace. Kitchen by Koch is planned around three basic areas —food preparation, serving, and laundry; large storage pantry forms island separating kitchen noises from rest of house. Frigidaire Div., General Motors Corp., Dayton 1, Ohio.

MS® MAXIMUM SECURITY

for swinging glass doors

with the revolutionary new
MAXIMUM SECURITY 1850 DEADLOCK
by **adams-rite**



The Maximum Security 1850 deadlock by Adams-Rite is the strongest, most compact deadlock yet devised for narrow stile swinging glass doors. This brilliantly designed deadlock has a bolt throw of fully 1⅜" from a backset as short as ⅞". As a result, it overcomes all the weaknesses of narrow stile design commonly caused by play in the hinges, flexible channels and jambs, inaccurate installation, and wear and tear of heavy traffic.

...the MS lock that doubles protection

Compare with ordinary lock. The MS 1850 retains as much bolt **within** the lock stile as is projected. Thus it **bridges the opening with a solid bar of hardened steel.**

This rigid construction makes forced entry impossible without complete destruction of the door channel itself.

The MS 1850 is wonderfully versatile and easy to install, and can be operated by any 1-5/32" mortise cylinder from one or both sides. Available in three backsets, the unit fits all popular size door channels for new or replacement installations. A natural half turn of the key throws or retracts the counterbalanced bolt.

Designers and builders of industrial, business, and institutional structures acclaim the MS 1850 as today's greatest advance in deadlock safety and simplicity.

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Send me complete information on the new Maximum Security 1850 Deadlock.

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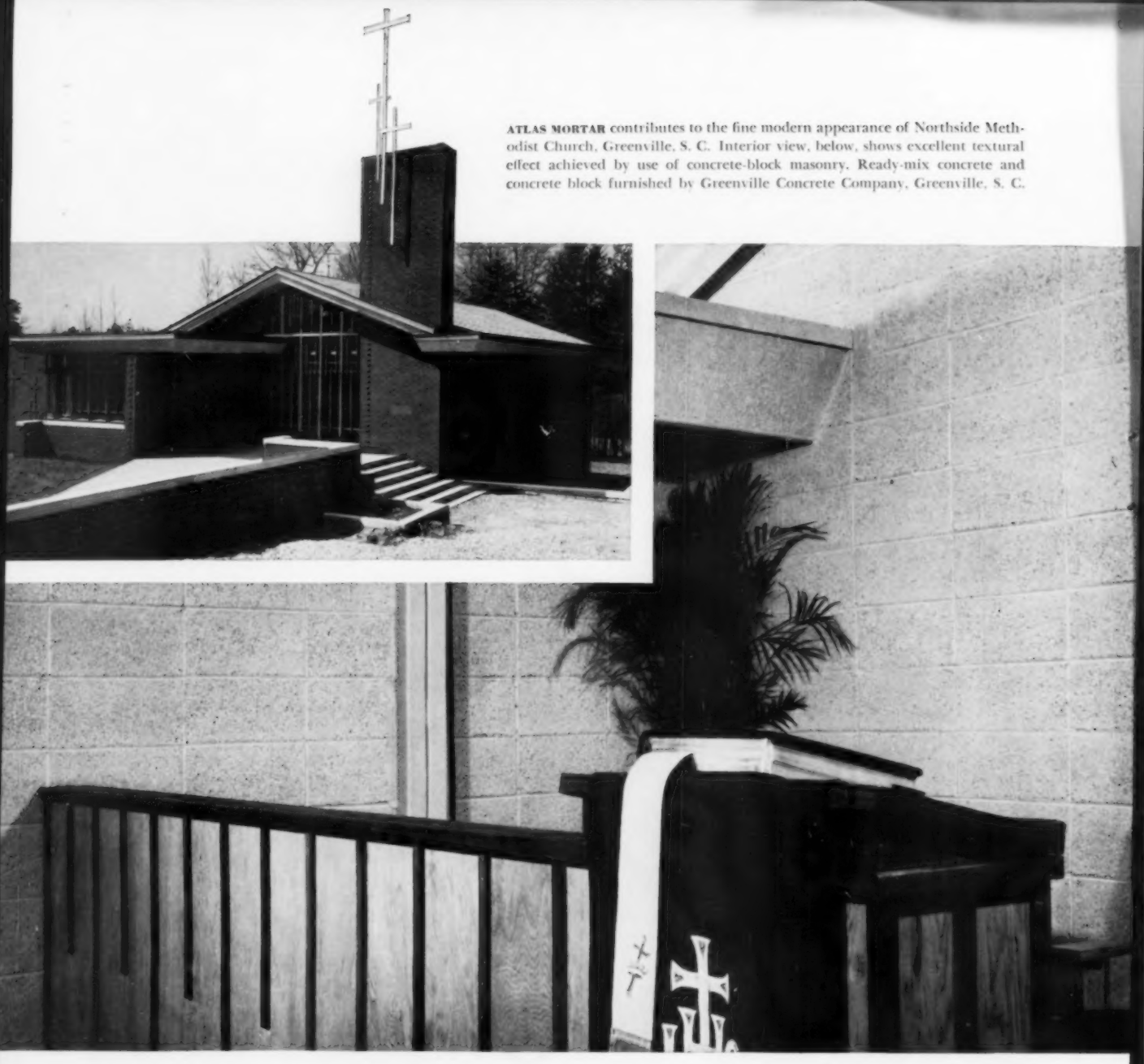

ATLAS MORTAR contributes to the fine modern appearance of Northside Methodist Church, Greenville, S. C. Interior view, below, shows excellent textural effect achieved by use of concrete-block masonry. Ready-mix concrete and concrete block furnished by Greenville Concrete Company, Greenville, S. C.

Get better mortar—get better masonry!

A GOOD DESIGN deserves good materials. Atlas Mortar Cement helps assure better mortar because of its consistent high quality and because it has *all* the properties most desired by masons.

BUILDERS RELY on Atlas Mortar's smooth plasticity, its water *retention* and *workability* retention, and its uniform color. The air-entraining properties of Atlas Mortar Cement make joints more resistant to the destructive action of freezing-thawing weather.

BRICK, BLOCK AND STONE all look their best in a setting of Atlas Mortar. So for lasting good looks on your next project, specify Atlas Mortar Cement. Complies with ASTM and Federal Specifications for masonry cement, which now include requirements for soundness (low expansion) in autoclave.

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UNITED STATES STEEL (USS) CORPORATION SUBSIDIARY

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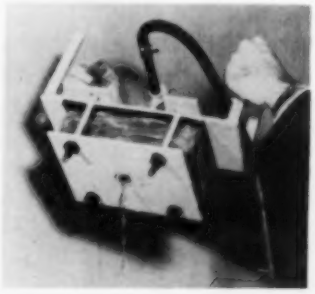
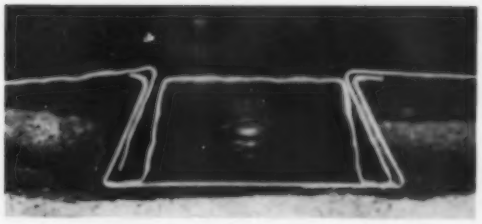
UNITED STATES STEEL HOUR—Televised alternate Wednesdays — See your newspaper for time and station.

Welded steel-plate girders (above), *190′ in length, provide maximum headroom while requiring a minimum of steel. Six-ton transverse girders utilize stress patterns that eliminate much of depth required for rolled sections; cross beams were designed similarly. Architects: Stiles and Robert Clements; fabricator: Grano Steel Co. Steel plate was produced by Kaiser Steel Corp., 1924 Broadway, Oakland 12, Calif.*

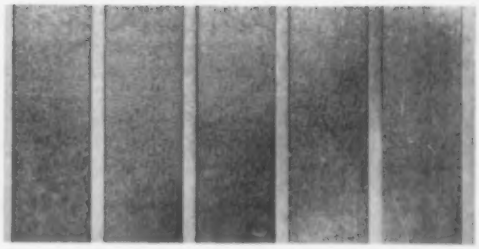
Unsanded 1⅛" seven-ply panel serves as both structural subfloor and underlayment (below). *This new structural panel of fir plywood has been engineered for installation over supports 48" on center and for any kind of finish flooring. Panels can be brought out flush with outside edge of sill so that the plate can be nailed over the plywood or the plate can be placed directly on the sill. Since walls can be carried directly on foundations, shrinking joist problems are eliminated. Douglas Fir Plywood Association, 1119 A St., Tacoma 2, Wash.*

Metaseal Masonweld, thermosetting resin, provides 100 percent watertight, airtight seal for wood, masonry, ceramic, and metal surfaces. Particularly applicable for sealing cracks in walls and floors. Demonstration (right) *shows water, under pressure, being forced into block which has sides coated with Masonweld. Water emerges from opposite face of block but not sides. American Metaseal Mfg. Corp., West New York, N. J.*





U. S. license to manufacture and market Uni-Crest, an expanded and expandable polystyrene (right), *has been acquired from West German company. Product is made from "beads" resembling coarse grains of sugar. When expanded and welded together, they form a homogeneous mass composed of individually closed cellules. Varying from one to 20 lb per cu ft in weight, the finished product can be produced at any density within that range. Uni-Crest can be molded or laminated to other materials. (On tippy-toes is starlet Janet Launt.) United Cork Companies, Kearny, N. J.*



New type of exterior wall siding constructed entirely of stainless steel, called No-Fastener, eliminates all fastening devices (above). *Special design of locking joint voids need for bolts, screws, studs, or welds and there is no field fabrication. Various stainless-steel finishes are available. Product Development Dept. 205, Washington Steel Corp., Washington, Pa.*

Dual glazing broadens application of

sliding glass doors

Desert heat is locked out by Ador's dual-glazed sliding glass doors. With exclusive 4-way weatherstripping to form a positive seal against dust, wind, sand and rain, the Ador dual-glazed sliding glass door is ideal for all-weather installations.

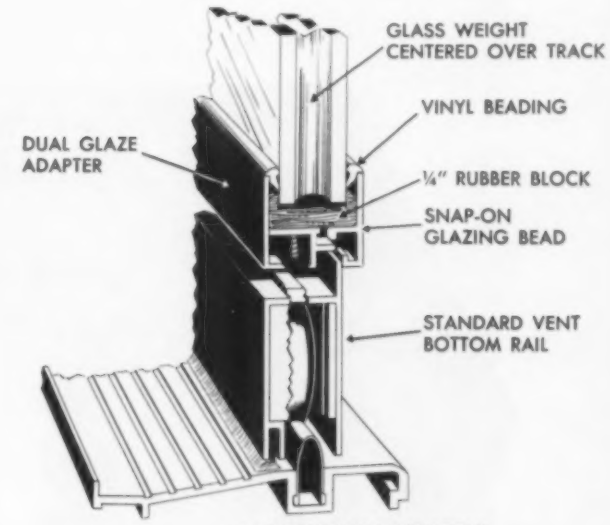
Severe climate no problem for dual-glazed Ador sliding glass doors

Sliding glass doors now can be used everywhere—regardless of climate conditions. This remarkably expanded range of sliding glass door installations can be credited to the growing application of dual glazing and new advances in weathersealing.

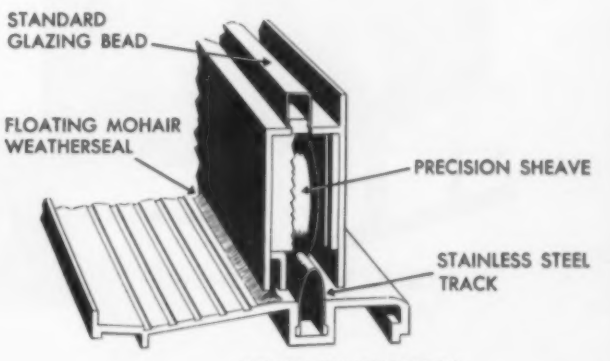
Unique in the field of all-climate sliding glass units is the Ador door with its exclusive 4-way weatherseal. Engineered to provide unusual structural strength, the Ador all-aluminum door is the only door designed with a standard frame which permits the use of *either* ¼" single or 1" dual glazing. This feature has particular advantage when dual glazing may be required later in a single glazed door.

Ador's dual glazing and advanced weatherstripping affords the comfortable use of sliding glass doors in areas of severe cold, snow, driving rains or contrasting hot desert winds. For literature on the Ador all-aluminum sliding glass door write to Ador Sales Inc., 2347 West Commonwealth Ave., Fullerton, California. Or call any Ador dealer or distributor.

Ador *America's Foremost All-Aluminum Sliding Glass Door*



ADOR THERMOPANE DETAIL



ADOR STANDARD DETAIL

Winter living becomes more enjoyable, more comfortable with Ador's dual-glazed sliding glass doors. Despite sub zero weather, inside temperatures are maintained and heating costs reduced by dual glazing. This important economic factor in year around heating and air conditioning, and Ador's competitive price offers unlimited opportunities for sliding glass door installations in any climate.

p/a products

(Continued from page 150)

air and temperature control

Kno-Draft Type-KH-D Diffuser: new residential air diffuser features built-in air-volume damper. Piston-type damper is manually operated by small exposed knob; damper, which varies air volume only at point of discharge, delivers conditioned air in horizontal pattern, assuring rapid mixing of supply and room air without draft or temperature variations. Ceiling-type unit is said to be particularly suitable for bedrooms, kitchens, and rooms where complete shut-off or frequent adjustments are desirable. Connor Engineering Corp., Danbury, Conn.

Imperial Dehumidifier: high-efficiency portable dehumidifier also heats and circulates air. Special features in recently redesigned unit include: humidity dial which indicates when to turn dehumidifier on or off; new high-efficiency air dryer; supplementary 1000-w heating coil; high-speed circulating fan; and filter to remove dust particles from air. Dehumidifier will remove approximately 17 to 25 pt of water per day in closed area up to 10,000 cu ft; heating unit delivers 3410 Btu per hr; recirculation of air is rated at 165 cu ft per min. Mitchell Mfg. Co., 2525 N. Clybourn Ave., Chicago, Ill.

Sun-Valley Air Conditioner: year-round absorption-type air conditioner provides both heating and cooling through single heat exchanger. In winter, gas burners heat solution of lithium bromide and water, causing it to boil at low temperatures and circulate through coils of heat exchanger; in summer, water is used as refrigerant to cool solution. Unit heats, cleans, and circulates air; or cools, dehumidifies, cleans, and circulates air. Conditioner, providing 96,000 Btu per hr heating output and 1600 cfm on cooling cycle, is sufficient for average-sized three-bedroom home; unit occupies only 10.4 sq ft. Servel, Inc., Evansville 20, Ind.

construction

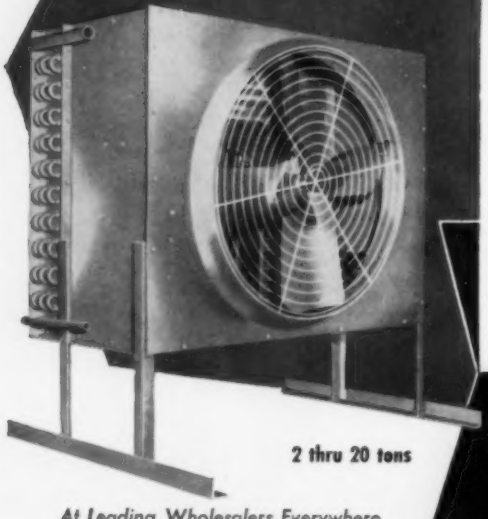
Levitt-Shape Blocks: two new cinder-block units, designed by builder Alfred Levitt, are shaped to enclose steel structural members. U-shaped block (*see photo*) is intended as cover for exterior spandrel beams, but can be used to enclose any horizontal or vertical beams; second block, which is solid except for one-in. slot, fits over beam flanges. Blocks fulfill insulation requirements for fireproofing of structural members; high density and smooth texture of units permits use as finished wall surface. The Cincrete Corp., 26-02 First St., Long Island City, N. Y.

Deltube Column Forms: fiber forms for round concrete columns feature plastic interior lining. Plastic lining is claimed to strip off concrete easily, leaving smooth,

(Continued on page 160)

PLANNING WATERLESS AIR CONDITIONING?

HALSTEAD & MITCHELL REMOTE AIR-COOLED CONDENSERS HELP THE ARCHITECT . . .



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Extra Safe Capacity Ratings . . . made possible by a unique new "dimpled" fin which increases air turbulence . . . *adds 15% to heat transfer capacity.*

Extra Years of Working Life . . . insured by exclusive, proven Halstead & Mitchell protection against corrosion; lifetime ball bearings; and a tubing assembly pattern which is self-reinforcing.

Extra Quiet Operation . . . due to extra-deep pitch, slow-speed fans, and rigid steel construction which cuts down on vibration.

Write for Detailed Information in BULLETIN AC-100

HM Halstead & Mitchell

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THE ARCHITECT designs Stainless Steel into windows, kitchens, work surfaces, ovens and other important places because he knows there is nothing like Stainless for clean, lasting beauty.

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the owner likes living with Stainless Steel. It's always gleaming and beautiful, cleans with a wipe, and lasts forever. And, to complement her kitchen she loves to own those shiny pots, pans, tableware, and appliances, all made of Stainless Steel.

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McLOUTH STEEL CORPORATION DETROIT, MICHIGAN • MANUFACTURERS OF STAINLESS AND CARBON STEELS

Recommended for LOW MOUNTING HEIGHTS

HOLOPHANE REFLECTORS

with MERCURY LAMPS

NEW!

For the Best Lighting of Plant Low-Bay Areas

•

Holophane Unit 635-AL

- ***Deep-Shielded Glareless Illumination***
- ***High Output from Long Life Sources***
- ***Low Operating and Maintenance Costs***

Photos Shown: (Above) Wolverine Tube Division of Calumet & Hecla, Inc.; (Below) Kaiser Aluminum and Chemical Co.

For Better Lighting Holophane *Be Specific*

HOLOPHANE

Holophane research has perfected an entirely new and practical approach for illuminating industrial interiors with low mounting heights. The new unit, 635-AL, designed for mercury vapor lamps has proved highly efficient in a wide range of low bay applications. In some of these, the ceiling is as low as 12 feet above the floor, 9 feet above the work plane . . . The unit consists of a metal-covered prismatic glass reflector assembly and ventilated socket housing. Its outstanding features are deep shielding and high outputs in useful lumen zones. The open bottom assures easy maintenance and simple lamp replacement . . . Write for complete engineering data; no obligation.

HOLOPHANE COMPANY, INC.

Lighting Authorities Since 1898

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(c76)

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Control Systems for Heating
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Versatility of Powers Control meets the varied needs of this unique building. A million visitors and exhibitors annually will enjoy its air-conditioned comfort.

Ten cooling towers on the Coliseum roof provide condenser cooling water for 4100 tons of refrigeration. Four centrifugal compressors carry the cooling load. Interconnection of the cooling and chilled water circuits permits compressors to serve either the offices or Coliseum.

The large Coliseum areas are supplied by high velocity single zone air systems while the small meeting rooms, office areas, etc. are served by low pressure fan units and by high velocity double duct systems. One of the 7 Powers Control panels is shown above.

In the office building, occupants can dial the temperature they wish. Individual space control is obtained with 550 Powers Heating-Cooling Thermostats regulating 1400 unit air-conditioner valves. Interior zones are served by high velocity air systems.

Consult Powers when you have a temperature or humidity control problem for a new or existing building. You can benefit from our 65 years of experience gained in all types of buildings.

THE POWERS REGULATOR COMPANY

SKOKIE, ILLINOIS | *Offices in chief cities in U.S.A., Canada and Mexico*
See your phone book

65 years of Automatic Temperature and Humidity Control

p/a products

(Continued from page 156)

dustless finish; body of tube is constructed of plys of long jute-fibered kraft bonded with waterproof adhesive and asphalt saturated on exterior to provide rigid water-resistant column forms. Delta Co., 333 W. 24 Place, Chicago, Ill.

Setlock Fastener: new stud-welded fastener with aluminum cap permits faster field assembly of metal curtain walls, improves appearance, and prevents rust or galvanic action. System employs steel shoulder-type studs with serrated tips, which are end welded to structural girts; sheet aluminum, glass-fiber insulation, and exterior material are impaled over studs; aluminum cap is then placed over serrated stud tip and driven into position with tool which causes aluminum to flow into and grip serrations. Fastener, claimed to have holding power of more than 800 lb direct pull, is equally effective when used with single-sheet metal roofing or siding. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, Ohio.

electrical equipment, lighting

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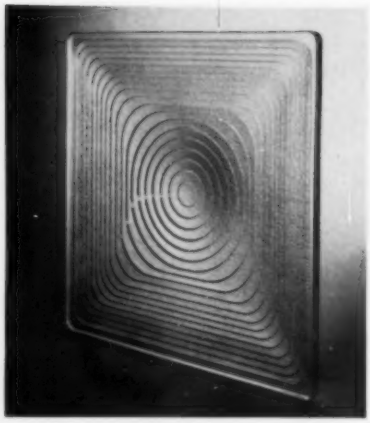


insulation (thermal, acoustical)

Acoustical Insulation for Steel Panels: insulating pads are made especially for cellular steel panels with perforated-metal ceiling surface. Pads—of long, thin glass fibers—are arched to keep insulation free of inner surface of perforated metal so that painting or washing will not impair acoustical efficiency; insulation is pliable, yet retains arched shape because of thermal-pressure molding process. Insulating pads, 4' long, are sized to fit into cellular-steel panels. Fenestra Incorporated, 2250 E. Grand Blvd., Detroit 11, Mich.

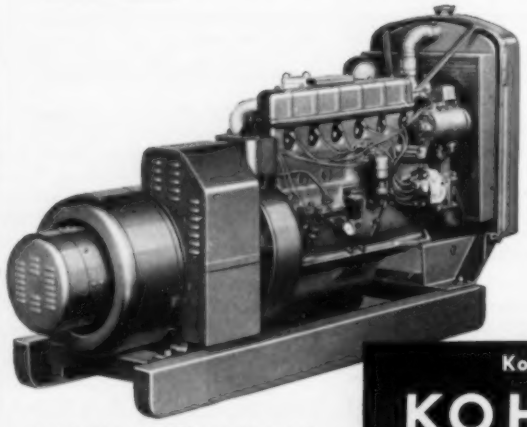
sanitation

Boco Tile Clip: polyethylene-plastic clip reduces maintenance of tile drain fields. Clip fits over top half of 4" drain tile to prevent soil infiltration; two inner lugs insure 3/8" spacing between tiles and hold clip in place. Claimed to last far longer than tar-paper wrappings, clip is unaffected by acids and alkalis. Boco Industries, Inc., 19424 W. Eight Mile Rd., Detroit 19, Mich.

Plastic-Jiffy-Joint Pipe: sewer pipe combines advantages of vitrified clay for body of piping and polyester plastic for joints. Spigot end of pipe is made of bright-red polyester to increase impact strength and reduce breakage; bell end has precision-cast bituminous socket providing flexibility for permanently tight joints. Joints are quickly made by painting bituminous socket with special solvent and inserting plastic spigot with spiral motion; piping is manufactured in 4' lengths with 4" diam and 3' lengths with 6" diam. Cannelton Sewer Pipe Co., Cannelton, Ind.

KOHLER Electric Plants
in building specifications
provide stand-by protection
before the emergency

When central station current is cut off, Kohler automatic stand-by plants will maintain lighting for operating and emergency operating rooms, corridors, stairways and exits; nurses' call bells; iron lungs; heating systems; sterilizers; baby incubators; X-rays; patients' elevators. Stores, schools, theatres use them to prevent panic in sudden darkness; homes, for automatic heat, refrigeration. They prevent costly interruptions in hatcheries, greenhouses, motor courts, refineries, sewage treatment and filtration plants, communication systems, filling stations, bakeries. Sizes, 1000 watts to 35 KW. Complete specification sheets for Kohler Electric Plants, ready to include in your plans, will be sent on request. Write for them. Dept H-17.



MODEL 35R81, *35 KW, 120/208 volt AC. Remote starting.*

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

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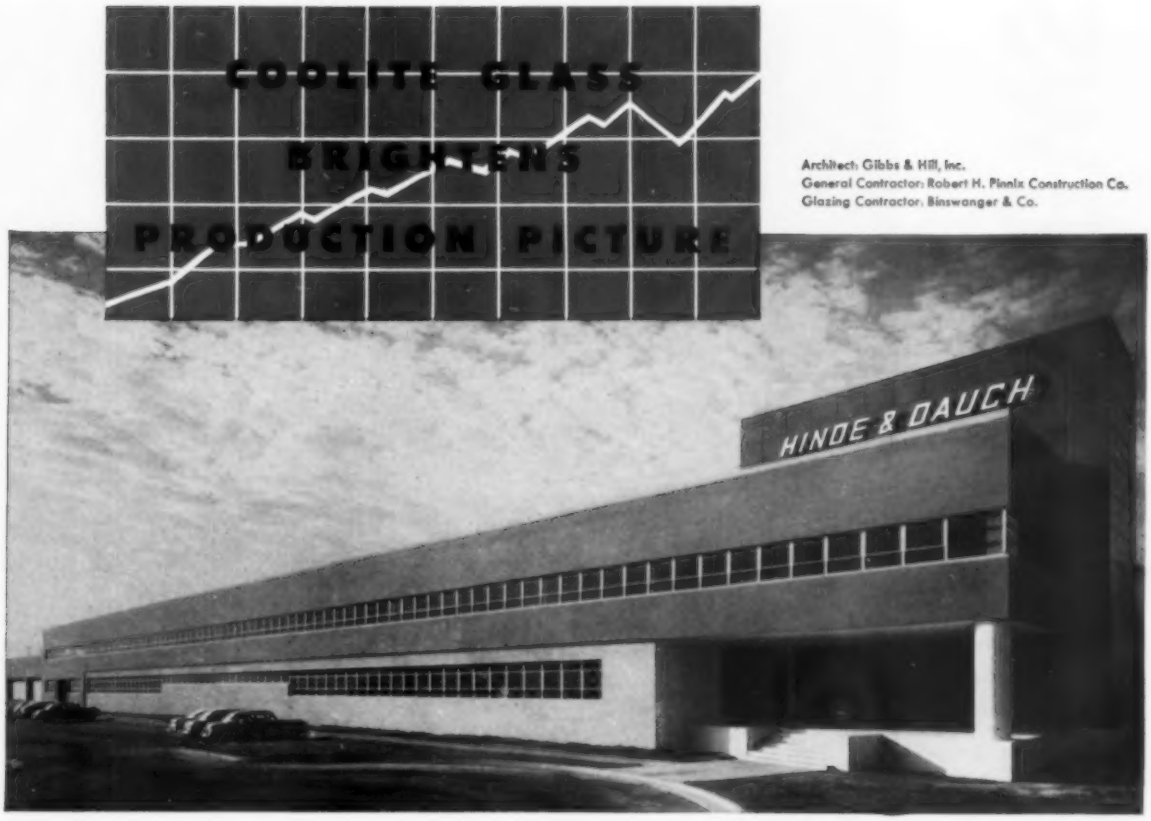

Architect: Gibbs & Hill, Inc.
General Contractor: Robert H. Pinnix Construction Co.
Glazing Contractor: Binswanger & Co.

Corrugated Box Plant Achieves Better Daylighting With Heat Absorbing, Glare Reducing Glass

Production efficiency and quality controls benefit from the high levels of natural illumination possible with Coolite. For Coolite, the heat absorbing and glare reducing glass, filters out unwanted elements in "raw sunlight." For example, this modern Hinde & Dauch corrugated box plant, Gastonia, North Carolina, takes full advantage of southern sunshine without distracting, uncomfortable glare and heat. 12000 sq. ft. Coolite, glare reduced both sides for maximum diffusion, is installed in two elevations . . . throws eye-easy daylighting deep into the structure. And since Coolite absorbs up to 50% of unwanted heat rays, the interior remains comfortable while flooded with low cost, natural illumination.

Employees feel better, work better, under Coolite-conditioned daylighting. In your new building or remodeling projects, let light give a lift to production. Specify Coolite by Mississippi . . . the heat absorbing and glare reducing glass that brightens any production picture.

Translucent, light diffusing glass by Mississippi for better daylighting, is available, wired and unwired, in a wide variety of patterns and surface finishes, all scientifically designed to distribute light to best advantage. Available at most leading distributors of quality glass.

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(Continued from page 156)

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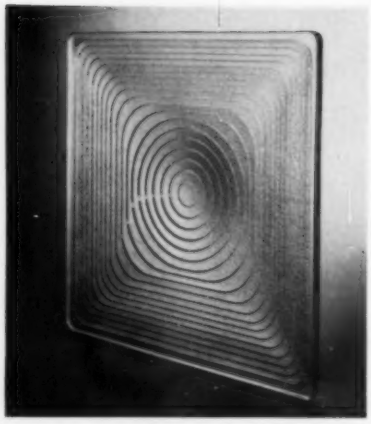

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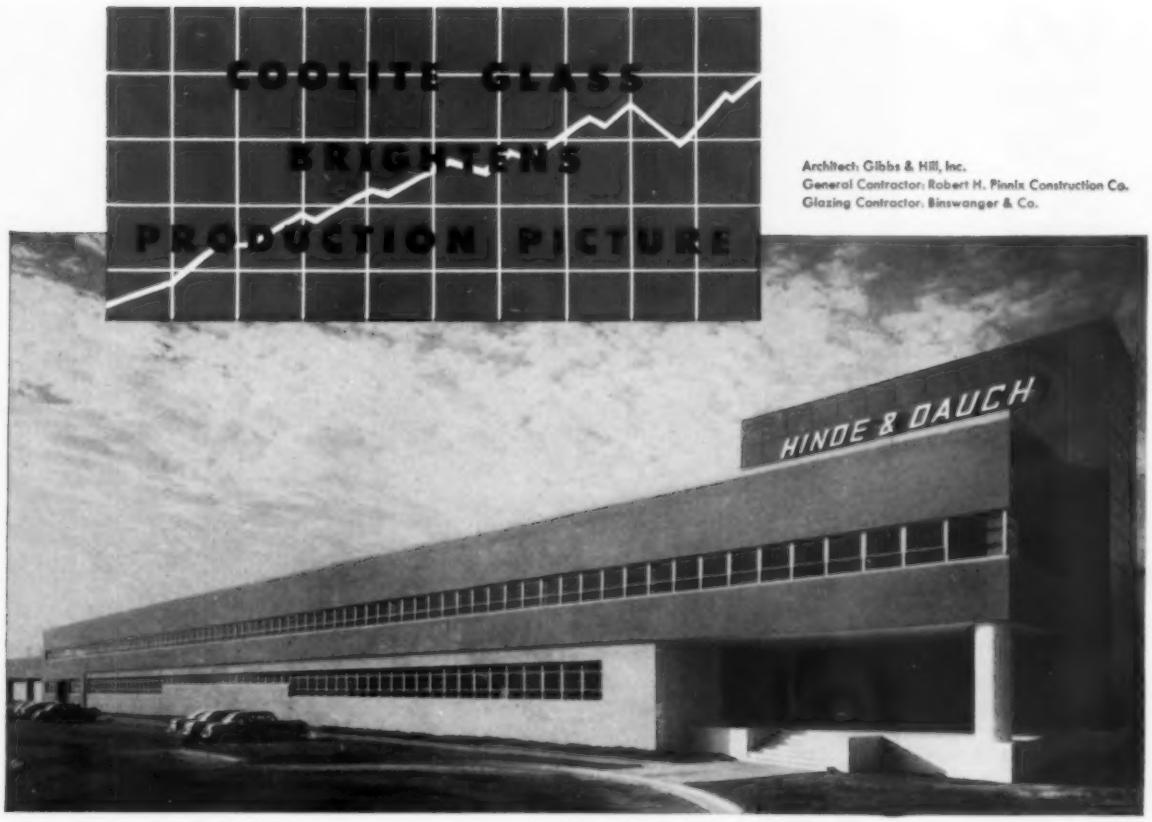

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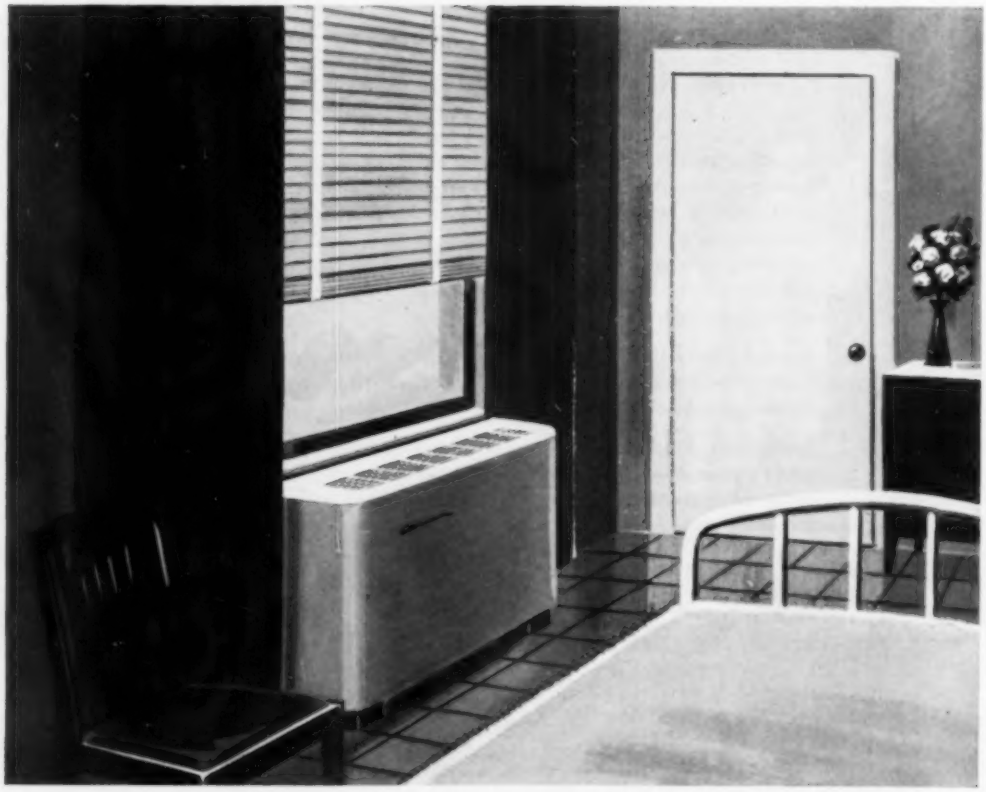
Carrier again makes news

▼ *Carrier's New Room Weathermaker*

New Carrier Weathermaker ▲



▲ *Carrier's New Unit Weathermaker*

New Carrier Modular Weathermaster Room Unit ▼

Here are the newest ways to air condition an apartment building, a hospital, a hotel, a motel, an office building

The four Carrier units you see here have one thing in common—they're brand new!

They open up a good many interesting design and application possibilities in the jobs you're just starting.

They may even suggest compelling changes in plans you've virtually completed.

The New Carrier Weathermaker* (top left) is the one self-contained air conditioner designed for lower installation costs. It requires less space and permits more freedom in the location of the unit, singly or as part of a multiple unit system. Can be installed with or without ductwork, built in the wall, or located completely in the room.

Carrier's New Room Weathermaker (bottom left) is an extremely flexible fan-coil unit. It can be mounted horizontally or vertically, with or without cabinet. Put it on the ceiling or stand it on the floor anywhere in the room. Attach it to a wall. Fur it in. Or recess it under a window. Three sizes—½, 1, 1½ tons. For chilled or hot water, or direct expansion. Provides individual control of summer cooling or winter heating.

Carrier's New Unit Weathermaker (top right) is a fan-coil unit designed for overhead installation. It installs easily in the top of a closet, over a corridor or hallway, or behind a wall. Three sizes—½, ¾, 1 ton. For chilled or hot water, or direct expansion. Provides individual control of summer cooling or winter heating.

The New Carrier Modular Weathermaster* Units (bottom right) bring a new flexibility to the world's finest air conditioning—the Carrier Weathermaster System. The new under-the-window units with their modular components fit into a variety of combinations—decorative ledges, built-in cabinets and modern bookcases. Now it's easy to make air conditioning part of interior design.

Carrier has *all* ways to air condition *any* job—and all Carrier equipment is engineered to the same uniform standard. So short-cut hours of selection by (1) using the Carrier line as a shopping guide and then (2) comparing values. Get in touch with your Carrier dealer or distributor. They're listed in your Classified Telephone Directory. Or write to Carrier Corporation, Syracuse, New York.

*Reg. U. S. Pat. Off.

Carrier

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refrigeration
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p/a reviews

books received

Architectural Index. Ervin J. Bell, 517 Bridgeway, Sausalito, Calif., 1955. 49 pp., $4

Applied Structural Design of Buildings. Thomas H. McKaig. Dodge Books, 119 W. 40 St., New York 18, N. Y., 1956. 442 pp., illus., $12.50

Architects' Detail Sheets. Second Series. Edited by Edward D. Mills. Philosophical Library, Inc., 15 E. 40 St., New York 16, N.Y., 1955. 228 pp., illus., $12

Intangible Content in Architectonic Form. Amos Ih Tiao Chang. Princeton University Press, Princeton, N. J., 1956. 72 pp., illus., $3.50

Plastics Progress 1955. Edited by Phillip Morgan. Philosophical Library Inc., 15 E 40 St., New York 16, N. Y., 1956. 432 pp., illus., $17.50

Labor Relations and Productivity in the Building Trades. William Haber & Harold M. Levinson. Bureau of Industrial Relations, University of Michigan, Ann Arbor, Mich., 1956. 266 pp., $4.75

one-night conversion

You Call That A House? *William Manners. John Day Company, Inc., 210 Madison Ave., New York, N. Y.,* 1956. 255 pp., $3.50.

Bob and Margaret Tyler, a standard young couple with a standard family consisting of a boy and a girl, come to Fairport, Connecticut, and build themselves a "contemporary" house, equipped with a standard glass wall and a standard butterfly roof. Refusing to be trapped into any unexpected behavior, their neighbors turn out to be bigotted traditionalists who hale our heroes into court to force them to modify their house. Eventually the chief bigot's house burns down and he is forced to spend the night at the Tylers', an experience which so illuminates the dark recesses of his ignorant mind that he calls off the trial, engages the same architect, and builds his new house in supercontemporary style.

Apart from some amusing episodes, such as the milkman leaving the milk at a different door each morning because he can't figure out

Design of Heating and Ventilating Systems. F. W. Hutchinson. The Industrial Press, 93 Worth St., New York 13, N.Y., 1955. 320 pp., illus., $7

Traffic Engineering. Theodore M. Matson, Wilbur S. Smith, Frederick W. Hurd. McGraw-Hill Book Co., 330 W. 42 St., New York 36, N. Y., 1956. 647 pp., illus., $12.50

Estimating Production and Construction Costs. Louis Dallavia. Dallavia Company, 2110 Elmen, Houston 19, Tex., 1955. 257 pp., $15

Modern Surveying for Civil Engineers. Revised Edn. Harold Frank Birchal. Philosophical Library, Inc., 15 E. 40 St., New York 16, N.Y., 1956. 528 pp., illus., $15

Hospital Purchasing File. 33rd Edn. Purchasing Files, Inc., 919 N. Michigan Ave., Chicago 11, Ill., 1956

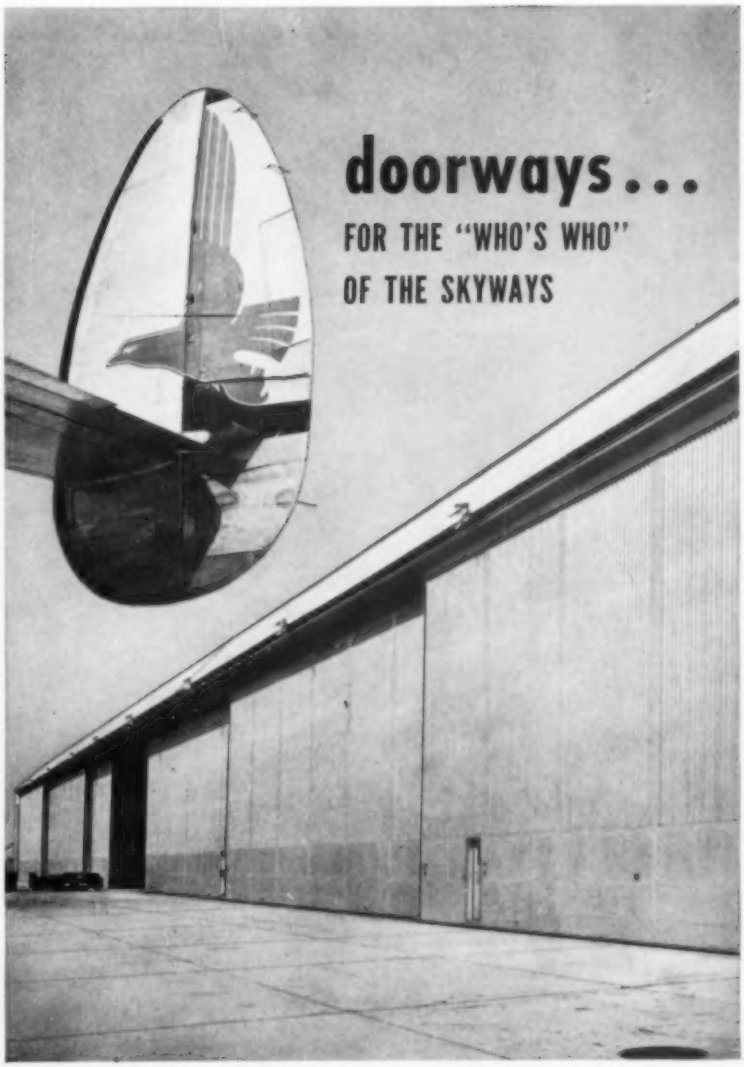
Electrical Estimating. Ray Ashley. Second Edn. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1955. 363 pp., illus., $8

which is the back door, this foray into modern domestic architecture goes no deeper than this short synopsis indicates.

This is a pity, for surely there is rich material for the novelist here, if he were willing to explore some of the human problems involved. What, for instance, makes some people rebel against the conformism of tradition by embracing the conformism of the "contemporary"? And what makes others rebel against the dictates of the day by cherishing the values of the past? Which *is* the rebellion, anyway? Manners' approach is much too superficial, much to glib, to result in anything more than a stock "good guy" vs. "bad guy" story.

Rather than trace the triumph of the Tylers over their benighted neighbors, I would have enjoyed learning what happened to the Tylers' own lives as affected by their new house. Did the glass wall and the step-saver kitchen turn them into honeymooners again? Or the op-

(Continued on page 170)



Hangar #9, New York International Airport. Planned and built for Eastern Air Lines by New York Port Authority. Contractor: Cauldwell-Wingate Co. International-built hangar doors provide two openings, each 33 feet high and totaling 461 feet in width — a combined entrance area stretching the length of some 1½ average city blocks.

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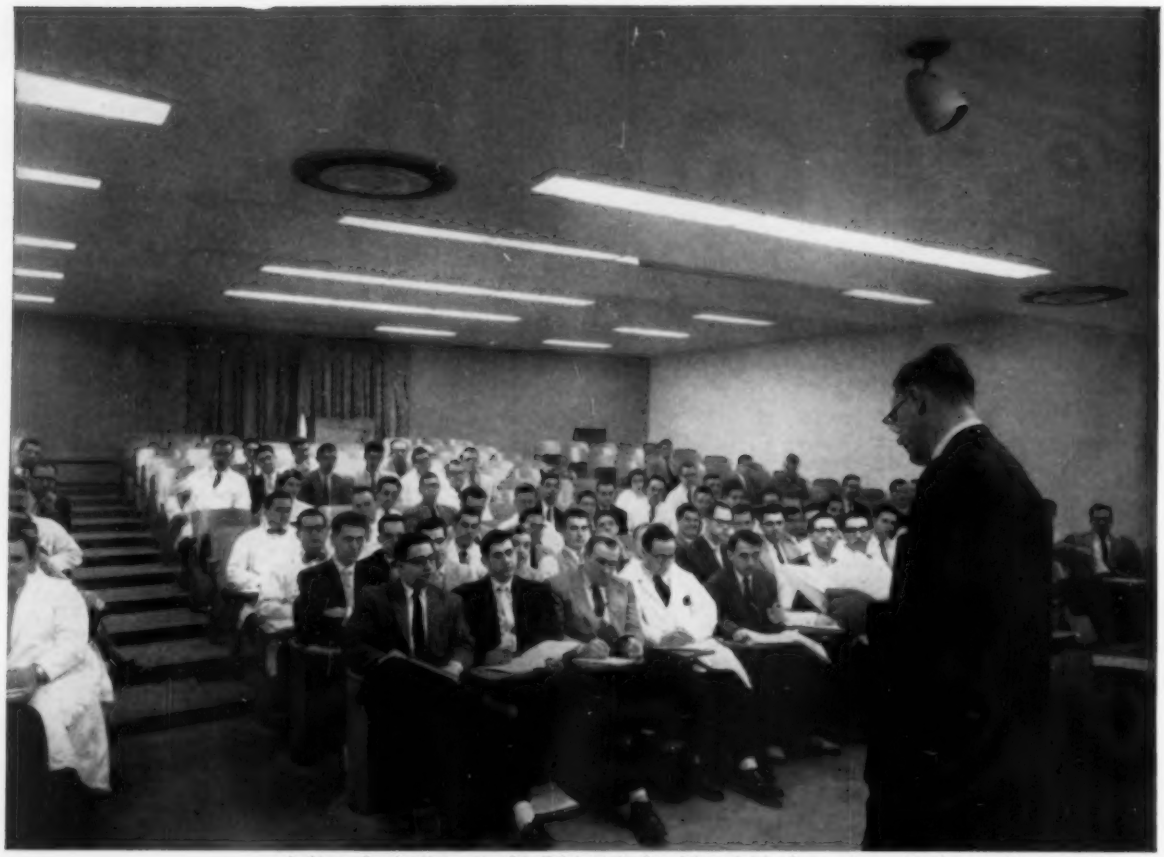

Architects for the University of Buffalo's Medical and Dental School were James, Meadows and Howard. James N. DeSerio was consulting engineer. *General contractor:* The John W. Cowper Company, Inc. All are Buffalo firms.

LONGSPANS PROVIDE UNOBSTRUCTED SPACE IN TWO MEDICAL SCHOOL AMPHITHEATERS

At the University of Buffalo's Medical and Dental School, two large amphitheaters extend from the first floor of the center wing. The larger of the two seats 450, the smaller one 250. Like the rest of the building, the exterior walls are brick-faced, with limestone trim. The amphitheaters are equipped with television screens and projectors so that students can watch unusual operations as they are actually being performed in other hospitals.

Both amphitheaters were built with Bethlehem Longspan Steel Joists in the roof structure. The designers selected these joists in order to provide column-free, unobstructed floor space. The joists, ranging in length up to 70 ft, are spaced 5 to 6 ft apart, and carry 2-in. precast concrete planks and 1½-in. insulation for the roof. The underside of the steel is covered with acoustical tile.

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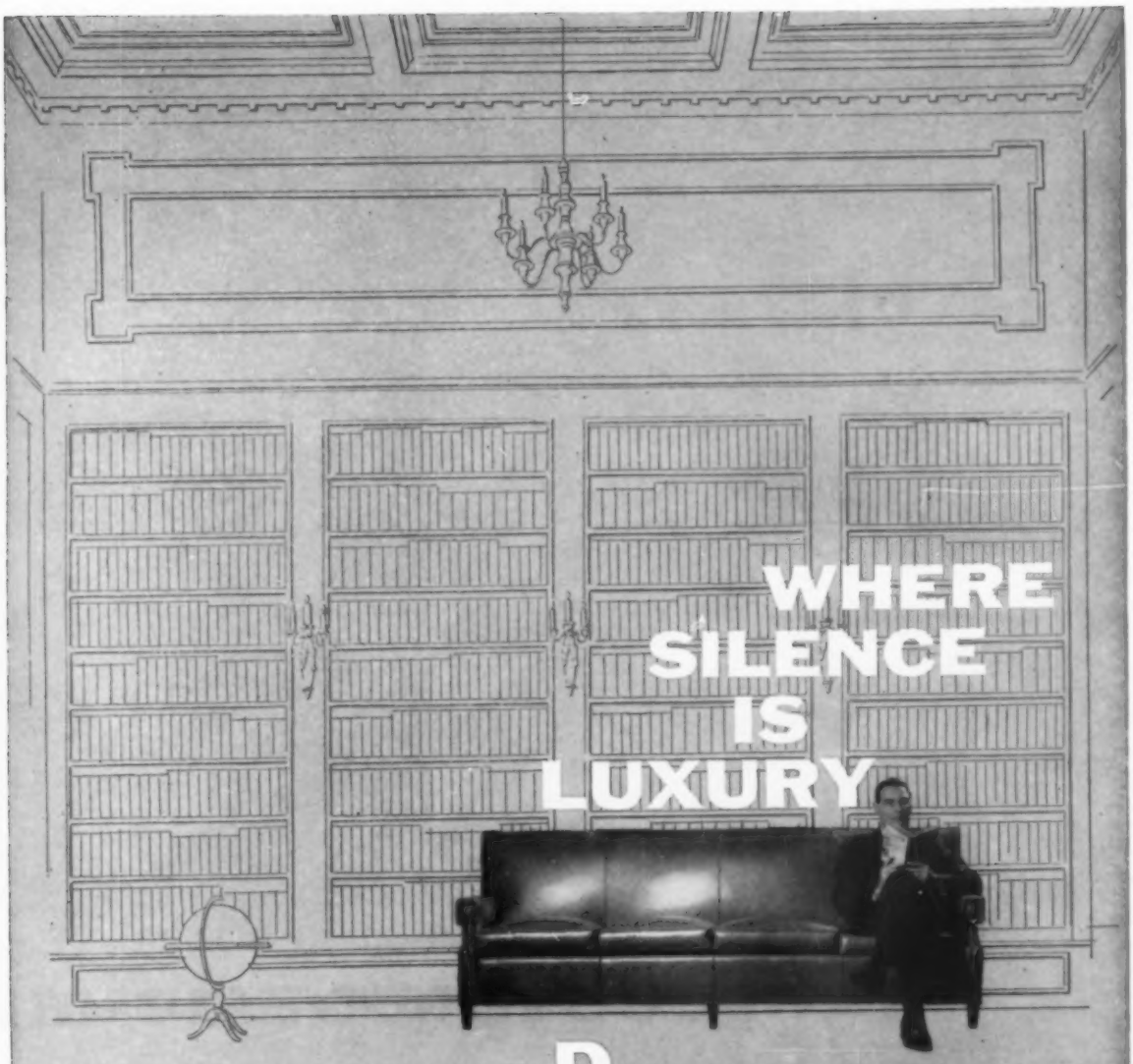
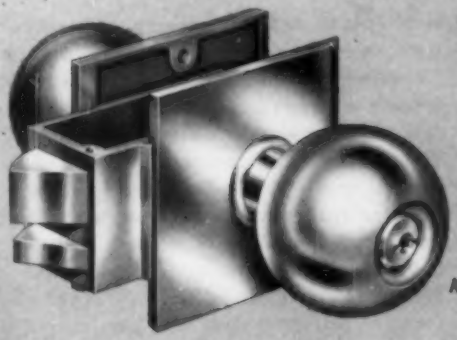
BETHLEHEM LONGSPAN JOISTS





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Architect Glen Drew, Poplar Bluff, Missouri, uses Fenestra Hollow Metal Door-Frame-Hardware Units for custom quality at stock door costs. O'Neal School, Poplar Bluff, Missouri, has 42 Fenestra Flush Doors. *Contractor:* George A. Gassman Construction Co., Poplar Bluff, Missouri.

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reviews

(Continued from page 165)

posite, is their divorce nearer, now that they see one another under such ideal lighting? And what of Bob Tyler's career? Does his new house now give him so much release from his office tensions that he's doing twice as well, or is he about to be fired? Or the children—are they nearer or closer to delinquency?

In other words, it appears to me that the real story, and of course there is one, is not the story of the Tylers' against their neighbors, but of the Tylers' in relation to their "contemporary" house. By neglecting the real meat of his material, I am afraid the author has produced an inevitably thin and bloodless piece of work, in which the isues are contrived and the outcome inconsequential. EUGENE RASKIN

forgotten lore

Church Architecture in New France. *Alan Gowans. Rutgers University Press, New Brunswick, N. J., 1955. 162 pp., illus., $8*

It might be safely assumed that the educated American knows less about Canadian history than about Rome. Alan Cowans' book supplies much of this missing knowledge in his attempts to align the church architecture during the *Ancien Régime*, or between the arrival of Champlain and the conquest by Britain, with political developments. There is the "Heroic Age" of the fur traders and early missionaries, where bark huts with paled walls and bent-twig vaults were the best the builders could do. There is the Age of Laval and the Jesuits, dominated by the Jesuit Bishop of all of North America—a monk of medieval asceticism but of absolutistic grandeur, decreeing that "my will being that the clergy be rightfully removable, revocable and liable to dismissal . . ." and prompting an exasperated traveller to comment: "You cannot imagine to what a pitch

(Continued on page 178)

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reviews

(Continued from page 170)

the Ecclesiastical Lords have screwed their authority. They prohibit and burn all books. . . ." But Laval was the first builder of churches, and under him the first or, one might say, only architect of the *Ancien Régime,* Jean Maillou, developed an indigenous parish-church type—an aisleless wide nave, suitable for processions, with a wide single apsis and a peculiar single-armed transept, surmounted by a steeply pitched roof and a bell-tower of faintly Stuart design. Then came the age of abandonment by France. Canada became the great joke at the sophisticated court of Louis XV. The most ribald stage success of 1743 in Paris was a slapstick affair called *Les Mariages de Canada* and Voltaire, in *Candide,* remarked that the English and the French are at war over a few acres of snow . . . ."

Left to themselves between 1700 and 1763, the Canadians became a tight-knit settler group. There were only between 4000 and 5000 immigrants during this whole period. By 1760, the 60,000 inhabitants of Canada were almost completely native born; and according to the Census of that year, "the Jesuits were by far the largest landowners in the country." The effect of this peculiar state of affairs, so vastly differing from the United States, was an almost total lack of cultural influences from Europe. In spite of attempts by Gowan to show in the extremely scant illustrations such influences as the façade of Vignola's "Il Gesu" on the old Cathedral of Quebec, or St. Etienne du Mont in Paris on various provincial churches, the most astounding aspect of this survey is the incredible paucity of design. As Gowan emphasizes most honestly, there isn't a single church of the *Ancien Régime* left in Canada. They were either destroyed during the Seven Years War or torn down and replaced in the late 19th and early 20th Century, in a wanton destruc-

(Continued on page 180)

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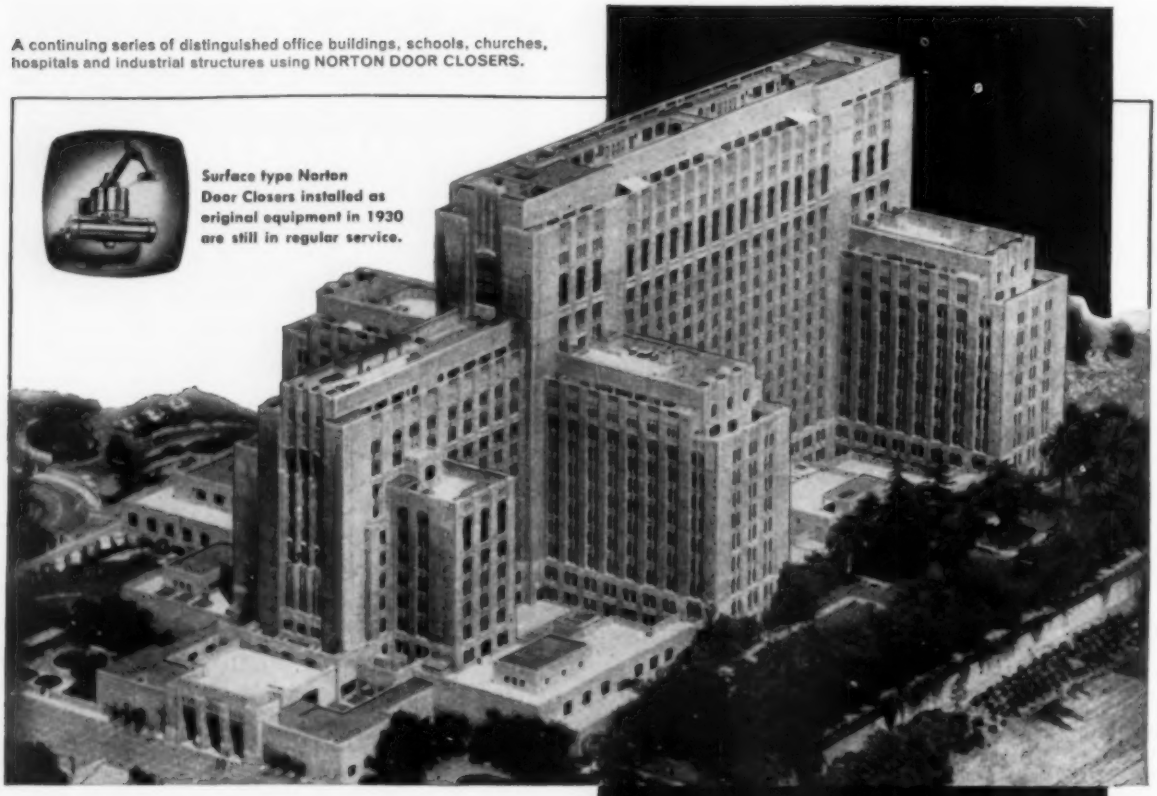

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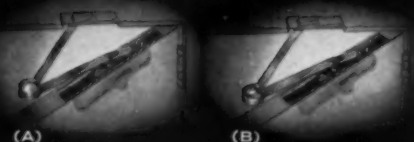

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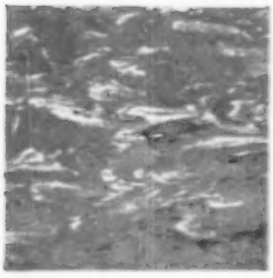

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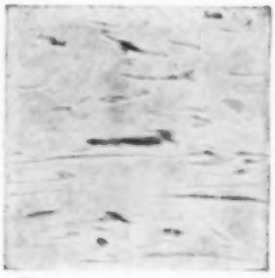

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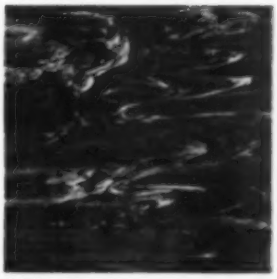

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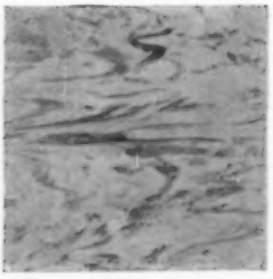

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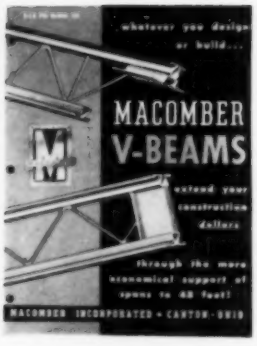
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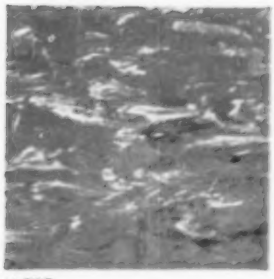

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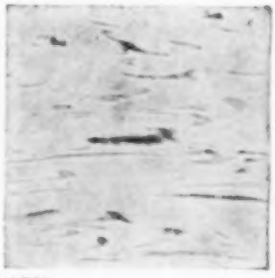

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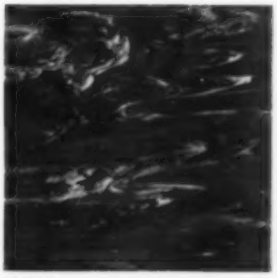

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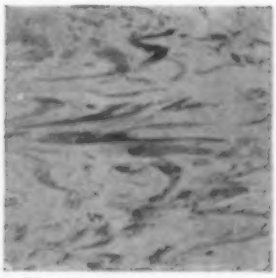

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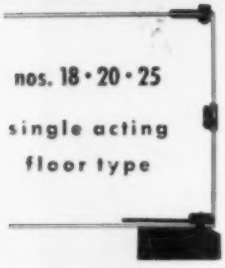

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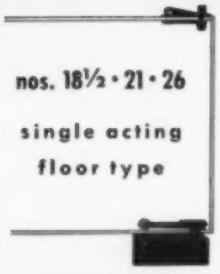
single acting
floor type

for interior room doors—where full unobstructed door opening space and wide door swing (to 180°) are important. Depth of 2 27/32" (including cement base) to suit shallow floors. Special styles meet Underwriters' Laboratories approval for fire doors.

center hung



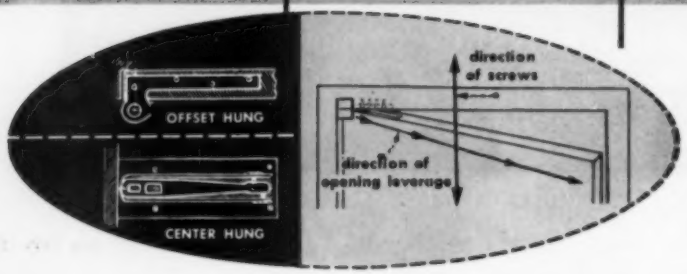
nos. 18½ • 21 • 26
single acting
floor type

for entrance, vestibule and interior doors—where concealment of both closer and door hanging hardware is desirable when door is open or closed. Ideal for batteries of doors. No mullions required, allowing utmost use of entrance area.

butt hung

nos. 318½ • 321 • 326
single acting
floor type

for entrance, vestibule and interior doors—where it is desirable to have door hung independently from closer. RIXSON ball hinges, featuring vertical adjustment, are generally specified for door hanging.



Because screws are at right angles to opening leverage, pivotal hung doors are more securely attached—less apt to pull away from the jamb.

conceal the closer and expose the beauty of the door

center hung	center hung	butt or center hung	offset and center hung
nos. 30 • 40 double acting floor type	DUO • CHECKS nos. 10 • 12 • 15 • 16 • junior double acting floor type	nos. 218 • 220 • 225 nos. 218½ • 221 • 226 single acting overhead concealed	MATCHING PIVOT SETS nos. 117 • 117¼ • 117½ L117 • 117¾ single acting concealed
for entrance, vestibule and interior doors that swing both in and out with each swing separately adjustable to local wind and draft conditions. Both the closer and door hanging hardware are completely concealed.	**for interior room doors**—where double door swing and complete concealment of door hanging and closer hardware are desirable. These closers are ideal for hospital and restaurant doors where people pass through with hands occupied.	**for entrance, vestibule and interior doors**—where it is desirable to conceal closer in jamb above door. Compact size, 2⅛" x 2⅛" x17", makes closer ideal for modern, narrow trim installations. RIXSON adjustable ball hinges are recommended for use with No. 218 series.	**for pivotal door hanging only.** Match the hanging style and general appearance of doors with RIXSON offset or center hung closers. Widely used on inactive doors such as on closets and wardrobes. Styles available for all doors from the lightest to the heaviest.

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Photos courtesy of Columbus Dispatch

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Here's double-barreled doorway efficiency and protection!

A Kinnear Steel Rolling Door and Rolling Grille in the same opening! Both open *upward*, coiling into a small space above the doorway.

When the grille alone is closed, it bars intruders without blocking light, air, sound, or vision.

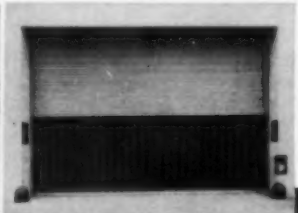
When the Kinnear Rolling Door is closed, its rugged curtain of interlocking steel slats gives extra protection against weather, intrusion, and fire.

With both door and grille closed, a *double* steel barrier repels vandals, thieves, or troublemakers.

Separately or together, the door and grille can be raised or lowered by push button. When opened, they clear the entire doorway, and stay completely out of the way. Whether opened, closed, or in action, they never take up usable floor, wall or ceiling space.

For safety, eye-appeal, efficiency and protection at doorways of any size, in new or old buildings, with any architecture or building material, you get top value with Kinnear Rolling Doors. Their *coiling upward action* has been proved by more than half a century of time-saving, space-saving, low-cost performance. Write today for full information.

HEAVILY Galvanized for lasting protection, Kinnear Steel Rolling Doors are thoroughly coated with 1.25 oz. of pure zinc per square foot of metal (ASTM Standards) then treated with Kinnear's special Paint Bond to assure quick firm full-coverage of field applied paint.



The neat, trim appearance of Kinnear Rolling Doors and Grilles is evident in the new and modern building housing the newspaper printing presses of the Columbus (Ohio) Dispatch.

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Saving Ways in Doorways

The KINNEAR Mfg. Co.
FACTORIES
1900-20 Fields Avenue, Columbus 16, Ohio
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reviews

(Continued from page 178)

tiveness that is appalling and makes our own historical carelessness look pale indeed.

The only impressive buildings of the pre-British era of Canada are not included in Gowan's book. They are the Seminaries, which are as characteristic for the spirit of the colonization of Canada as were the fortresses built by the Spaniards, the manor houses of the Virginians, and the homesteads of the New Englanders. The churches, all described and illustrated here from drawings, etchings, and descriptions of historical documents, make one rather sad by their deficiency. They prove a point every architectural historian must make in summing up the Renaisance period north of the Alps: the English, by virtue and vice of their parliamentary regime and their mercantilism, developed a public and bourgeois architecture that was for centuries to come the mirror in which the rising middle class saw their glorified image. The French, by virtue and vice of their absolutistic rulers and the inseparable identification of church and crown, created a monumental style that swept the world by its magnificent integration into the "Gesamtkunstwerk" of building, landscape, and art. But it failed to endure because it left out the dwelling, and it failed to provide the abandoned Canadian settlers with an architectural tradition from which to develop their own version of McIntire, Bulfinch, Sullivan, or Wright.

SIBYL MOHOLY-NAGY

incomparable treasures

Marvels of Ancient Rome. *Margaret R. Scherer. Phaidon Press, Inc., 575 Madison Ave., New York, N. Y., 1955. 430 pp., illus., $7.50*

When, after World War II, American tourists who had returned from Europe compared their impressions, the glamour of Paris receded more

(Continued on page 184)

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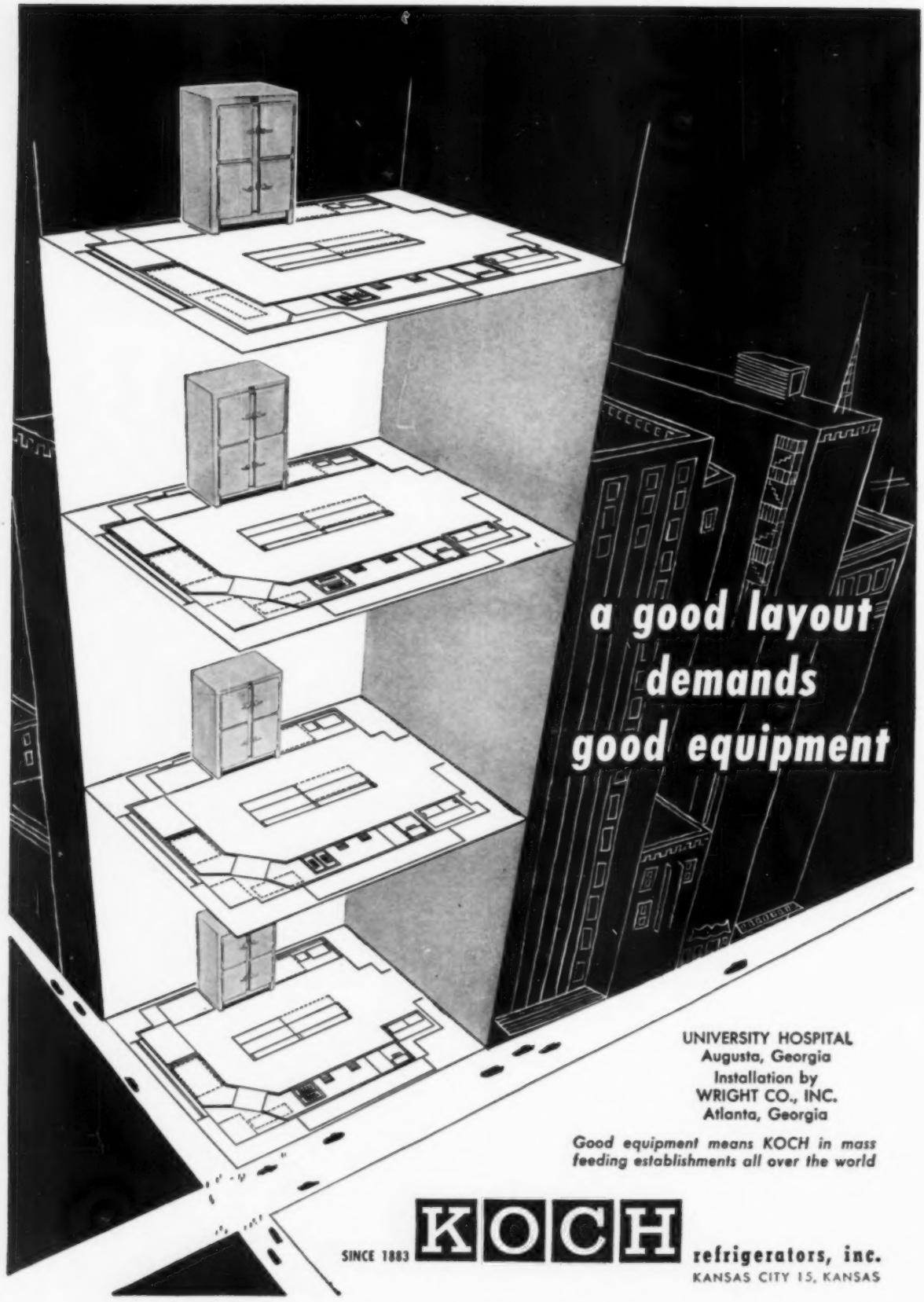

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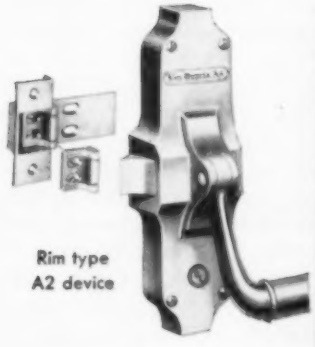

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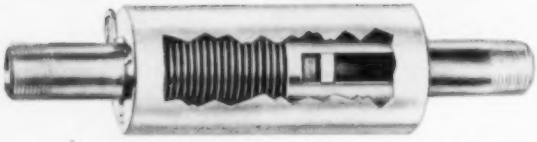

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Flexon Expansion Joint Design Guide

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These units have been especially designed to replace outmoded methods of expansion compensation; slip joints, swing joints, pipe loops and bends become things of the past. The objectionable noise of pipe creeping caused by uncontrolled expansion is eliminated and you are assured of long maintenance-free leakproof service.

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Manufacturers of flexible metal hose and conduit, expansion joints, metallic bellows and assemblies of these components.
In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

reviews

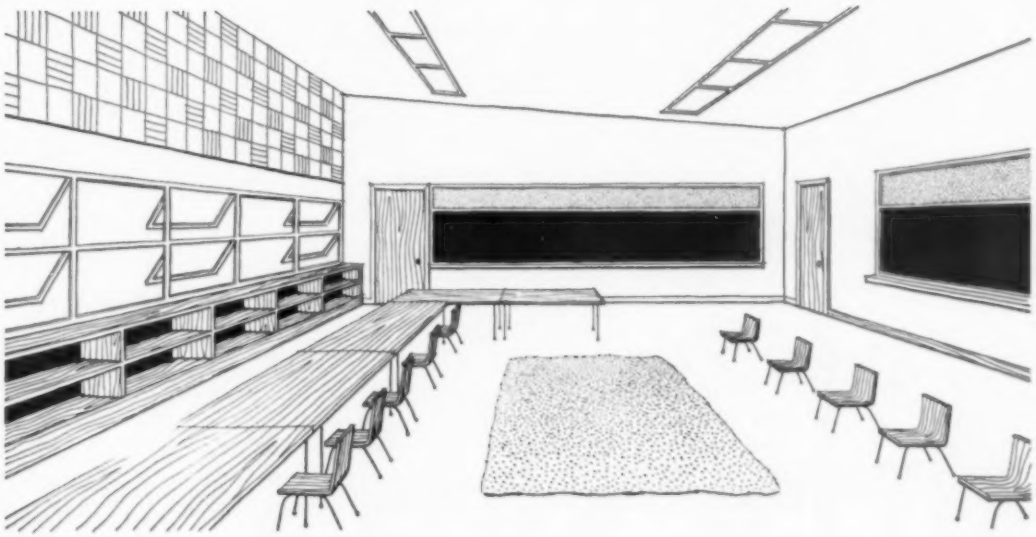
(Continued from page 180)

and more before the splendor of Rome. This pretty general predilection means more than a mere fashion, it characterizes a trend in taste which seems to be rather widespread. And we are not thinking here of professional archeologists, art historians, and architects; but of the general public, with open eyes and open minds.

The reason for this comeback in general appreciation seems to be the growing awareness that the monuments of Rome actually encompass the total history of Western civilization, preserving even the Greek heritage. The garishness and noise of the Mussolini era had almost obscured this fact in the eyes of the tourist who, then, by all means of advertising and publicity was forced to indulge in the marvels of 20th Century Rome. But the Marvels of Ancient Rome, the *mirabilia Romae*, as the title reads of the first guidebook to Rome's monuments (written about 1150), are somewhat more solid. In their totality they still define the over-all picture of the city, and certainly not only for archeologists.

Margaret Scherer's extraordinary book leads us, as the late Charles Rufus Morey writes in his foreword, "through the city's accumulated past," through the ancient, the medieval, the Renaissance, the Baroque, and even through the Rome of the early 19th Century. The author conveys her knowledge by photographs with extensive scholarly captions—photographs which do not show the familiar postal-card vistas, but which are taken at unusual angles by an extremely sensitive eye — sensitive equally to architectural and to painters' values. And these modern photos are juxtaposed to old visual documents of the same subject matter. They range from ancient coins and reliefs and medieval illuminated manuscripts to elaborate copper engravings and etchings from the 16th

(Continued on page 188)



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...BUILDS PATIENT MORALE

ONE WHOLE WALL OF EVERY ROOM IS MADE INTO A PICTURE WINDOW BY COMBINING CECO-STERLING ALUMINUM DOUBLE-HUNG AND FIXED WINDOWS . . .

The therapeutic value of sunshine and view had much to do in guiding Pereira & Luckman, planners, architects and engineers of Los Angeles and New York City, in designing the Grossmont District Hospital. To give patients a better outlook they made the whole side of each room into a wall of glass—a picture window bringing in sunshine and acres of view.

Ceco-Sterling Aluminum Double-Hung and Fixed Windows accomplished the desired effect. Maximum glass was possible because of slender sleeving mullions and narrow sash sections. And important, too, was the tight weather-seal provided by Ceco Windows. On your next building project, consult Ceco Engineers. They will help you make effective use of metal building products.

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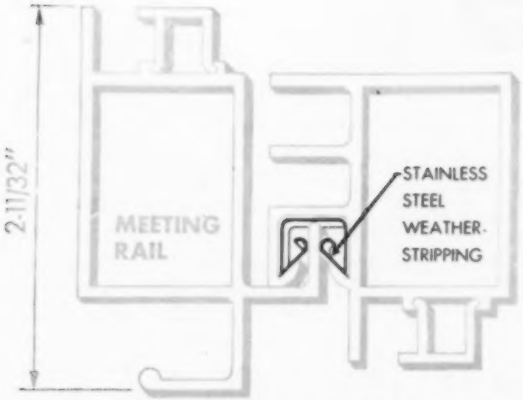
Windows, Screens and Doors / Ceco-Meyer Steelforms / Concrete Reinforcing / Steel Joists / Metal Roof Deck / Metal Lath

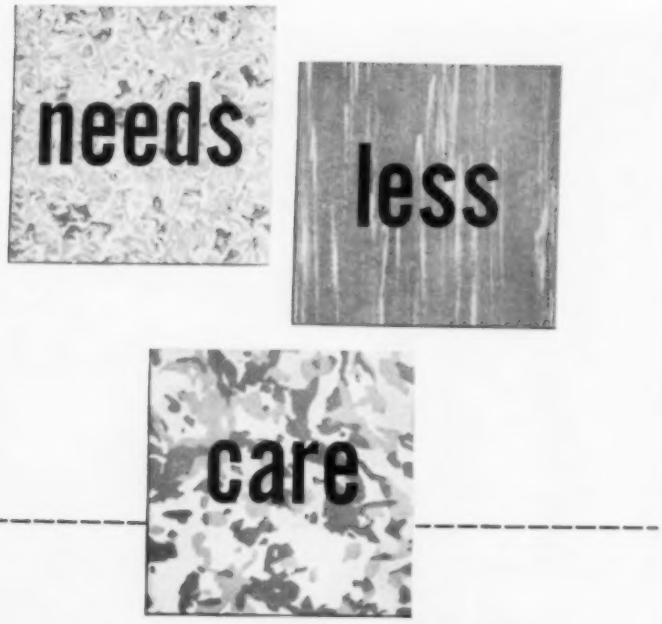
Front elevation of Grossmont District Hospital, San Diego, California presents interesting pattern of light and shade, with Ceco-Sterling Aluminum Double-Hung and Fixed Windows and Screens providing echo accents for the main motif. Pereira & Luckman, planners, architects and engineers.

There's minimum air infiltration with the use of Ceco-Sterling Double-Hung Monumental and Commercial Windows, Series 200-B. That's because the sash float on stainless steel weather stripping, assuring tight, freely operating, vertical sliding windows. They operate silently, so necessary in hospital windows.



Note the heavy extruded box sections for rugged performance, and the double-contact stainless steel weather stripping for tightness. Similar weather strip at jambs provides a spring cushion contact, holds sash clear of frame for easy sliding.

The sweep and pattern of the window treatment lend stately drama to Grossmont. Visors over the windows and right-angle fins control glare while admitting abundant light.



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reviews

(Continued from page 184)

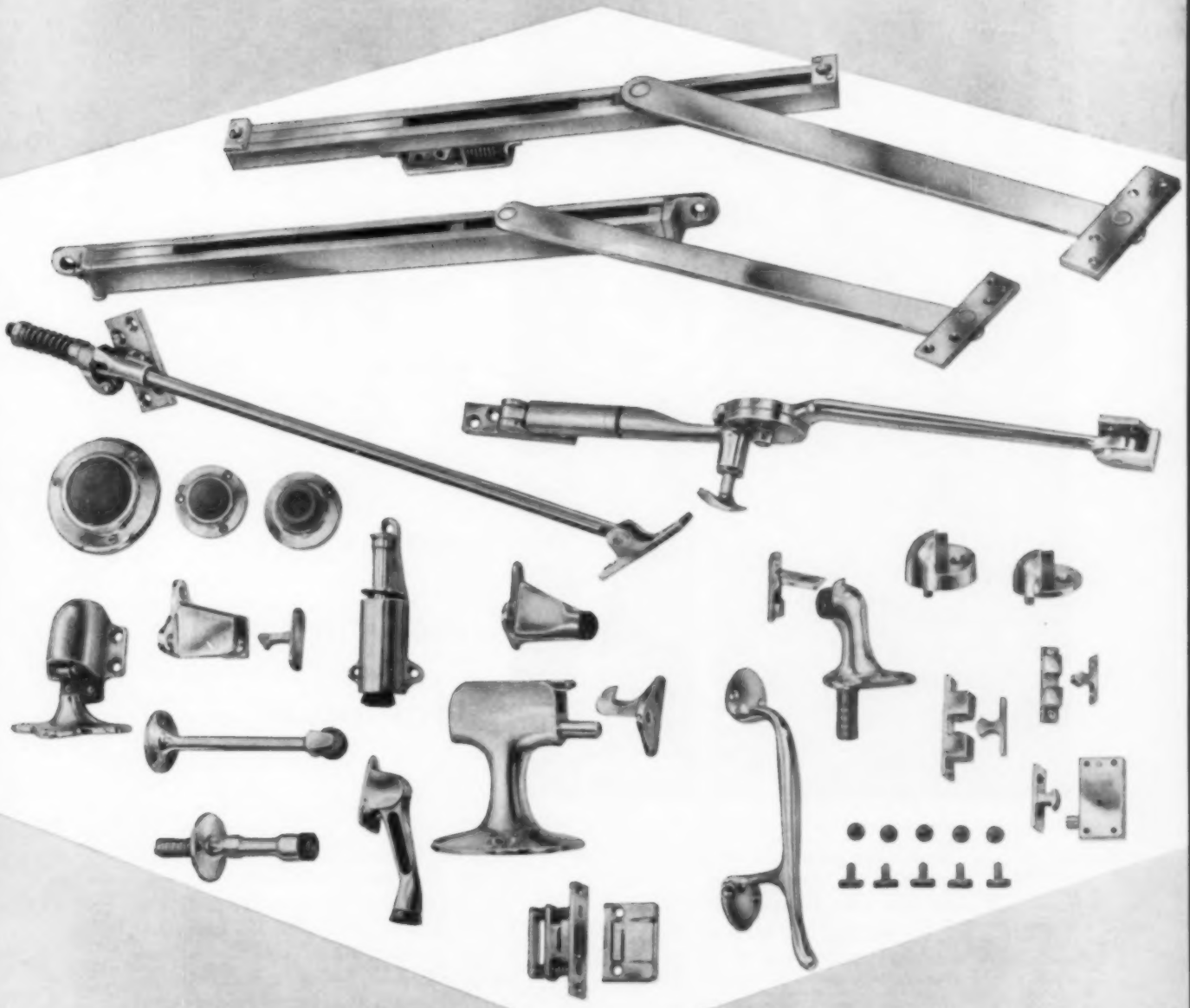
Century to the 18th Century; and to paintings by masters who, during the last centuries, had tried to mirror the greatness of the Eternal City as crystallized in her architecture and ruins, from Heemskerck to Turner and Corot.

The neglect of delapidated lonely ruins in the Middle Ages, as depicted in contemporaneous manuscripts, is followed by the gradually growing antiquarian interest and the intensified understanding and emotional participation of the first generation of the Renaissance, by the grandiose instrumentation of the etchers of the 18th Century under the leadership of Piranesi, and eventually by the rather pale lyrical romanticism of the generation of Shelley and Byron. Their counterparts in the visual arts—English, German, and Danish painters of this period—seem, in comparison with the masterworks of earlier periods, to be slightly overrated by Miss Scherer.

Whether considering the Capitol or the Palatine, the Baths of Caracalla, the Forum of Nerva, or individual statues, we are made to compare the ancient documentations with the realities of our days. Visual representation is supplemented by quotations from all possible scholarly and literary sources, guidebooks and travel diaries that one intellect could gather and absorb. The compass of the literature quoted—and the analytical mind that made their selection—can be appreciated fully only by those steeped in Roman lore. But they, alone, are not the audience to whom Miss Scherer has dedicated this admirable work of many years of devoted research. On the contrary, every pilgrim to the Eternal City, and especially architects should intensify their enjoyment of the individual monuments by studying—before and after—text and pictures alike. Like nature, Rome is seen and felt by each successive generation in a new way, each time interesting

(Continued on page 191)

the satisfaction of specifying PROVEN quality...



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The glass is *Parallel-O-Plate*.
Architect: Gerald H. Bense & Associates, Whittier, California.

these reflections tell a true story... looking in, looking out, looking at

When reflections in a window are distorted, see-through vision is distorted too. As a result, the building makes a shoddy impression.

The reflections in the window of *this* building are clean and true because this glass is L·O·F *Parallel-O-Plate** — the most distortion-free (the only *twin-ground*) plate glass made in America. Yet in most localities, *Parallel-O-Plate* Glass costs no more than ordinary plate glass.

So it makes good sense to have *Parallel-O-Plate* Glass in *your* windows, storefronts, display cases and mirrors. You'll find it's so much better — looking in, looking out, looking at. Read the column at the right for important facts on *Parallel-O-Plate*.

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FACTS

COMPARE the reflections of the upside-down signs in the mirror of conventional plate glass (top) and the mirror of *Parallel-O-Plate** (bottom).

Parallel-O-Plate Glass is more distortion-free than ordinary plate glass because its surfaces are more parallel.

This great degree of parallelism is the result of a special kind of grinding called *twin-grinding*.

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reviews

(Continued from page 188)

and conclusive—conclusive for the emotions and taste of the then living and conclusive for the eternal esthetic values of Rome's marvels.

PAUL ZUCKER

valuable reference

American Architects' Directory. *Edited by George S. Koyl. R. R. Bowker Company, 62 W. 45th St., New York 36, N. Y., 1955. 748 pp., $20*

For the first time, a biographical directory of American architects has been compiled, covering AIA members as well as those architects who have gained professional stature without belonging to the Institute. Edited by George S. Koyl, FAIA—under the sponsorship of the American Institute of Architects—the important biographical data on some 10,800 practicing architects has been assembled. Each entry lists the architect's home and business address, outstanding architectural achievements, education, and professional affiliations, providing this information was made available.

This directory can serve as a valuable reference book for public libraries, business firms, and architects. In addition to the biographical data, arranged alphabetically, a geographical cross index premits the reader to locate the architects of a specific region or city. In the appendix is included material which with most architects are familiar, but which the public, unfortunately, is not—the AIA documents on "Value of the Architect," "Selection of an Architect," "Standards of Professional Practice," and "Schedule of Architectural Services." Also listed are national, regional, and local AIA officers, winners of annual awards and honors, AIA College of Fellows, National Council of Architectural Registration Boards, and the Association of Collegiate Schools of Architecture.

Perhaps the only fault in a directory of this kind, is that apparently

(Continued on page 194)

it's that simple!

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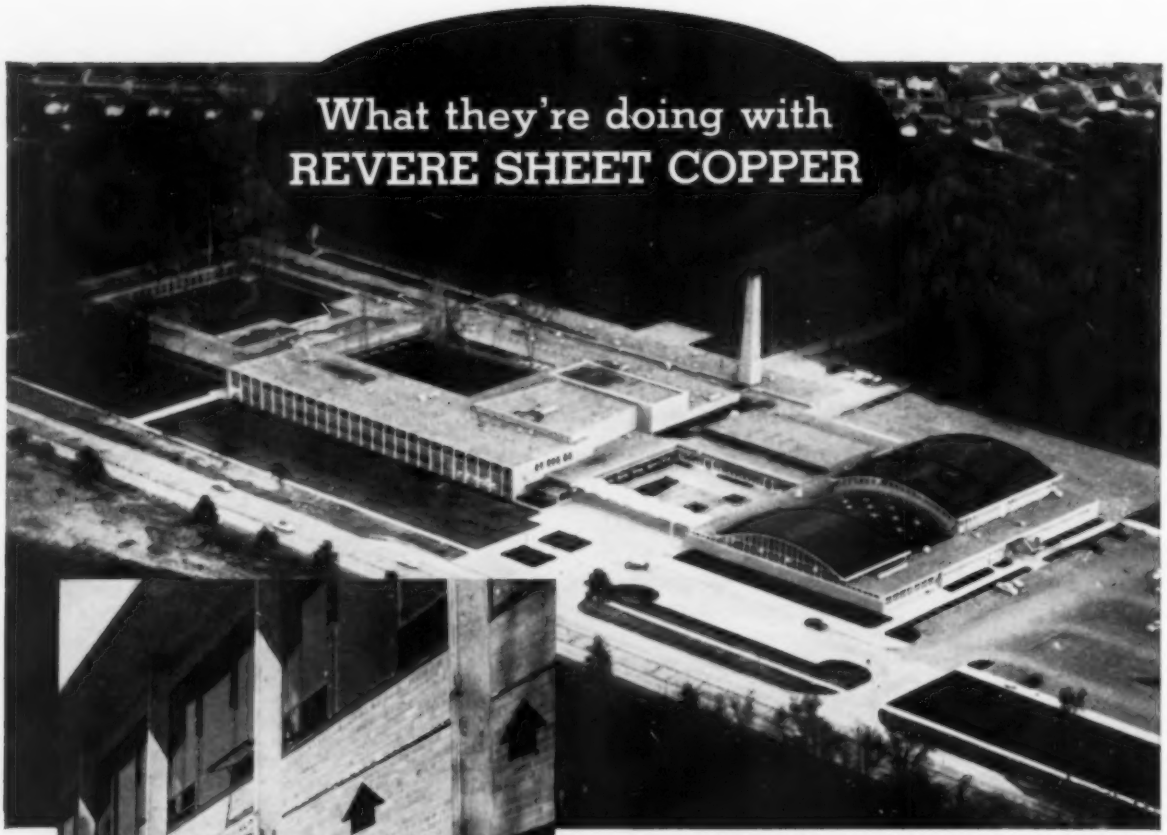
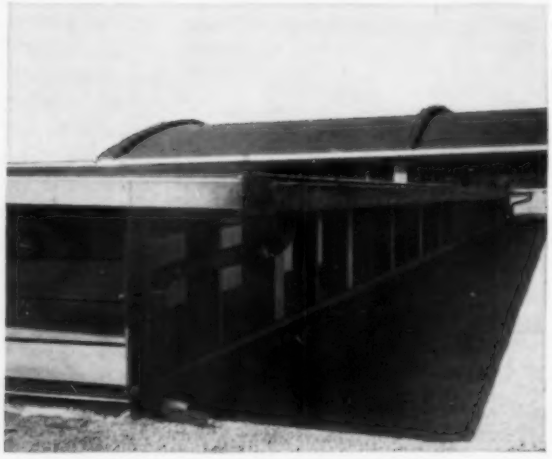
What they're doing with REVERE SHEET COPPER



Architects: EBERLE M. SMITH ASSOCIATES, INC., Detroit, Mich.
General Cont.: O. W. BURKE CO., Detroit, Mich.
Sheet Metal Cont.: J. D. CANDLER ROOFING CO., Detroit, Mich.
Revere Dist.: COPPER AND BRASS SALES, INC., Detroit, Mich.

Here is Revere-Keystone 2-Piece Cap Flashing shown installed between the windows, with receiver in place ready for the installation of the cap. A greenhouse conservatory will be attached to the main building at this point. After the conservatory roof has been completed and base flashing put into place the cap flashing will be inserted. This exclusive design permits masons and roofers to work without interference and makes installation of this factory-formed, 2-piece cap flashing simple and easy.



Approximately 15,000 lbs. of Revere Sheet Copper and 3,700' of Revere-Keystone 2-Piece Cap Flashing were used on this school. Here you see gutter, conductor, splash pan, gravel stop and Revere-Keystone 2-Piece Cap Flashing . . . all of Revere Copper.

REVERE-KEYSTONE

EASY-TO-PLACE

2-PIECE CAP FLASHING

used to protect against leaks in

EDSEL FORD HIGH SCHOOL

Dearborn, Michigan

The Edsel Ford High School is a fine example of the use of Revere-Keystone 2-Piece Cap Flashing* in modern construction.

The architects, EBERLE M. SMITH ASSOCIATES, INC., have for years been using their own detail of a 2-piece cap flashing, but after discussing the many advantages of the new Revere-Keystone 2-Piece Cap Flashing with them, and the sheet metal contractor, it was readily accepted to meet the flashing specifications.

Here are some of its outstanding advantages:

FREE WALL—It provides the roofer with an unobstructed wall face for the placement of the base flashing. Receiver is laid in during construction of wall, while the insert is snapped in only after all roof and base flashing work is finished.

STRAIGHT CLEAN LINE, PERMANENT GOOD LOOKS—Factory-bent to precise dimensions. This, with the one-inch locking tongue, assures alignment of receiver slots, uniform appearance.

PERFECT WEATHER-SEAL—Factory-formed angles on the receiver and insert cause latter to hug the base flashing, weather-seal effectively. Water cannot blow up behind flashing.

NON-LEAKING DAMLOCK—Requires no soldering except for special conditions. The interlocking copper-to-copper overlap creates a dam which prevents longitudinal travel of water and drains seepage to the face of the wall.

VERTICAL RECEIVER SLOT ON WALL FACE—Position of vertical receiver slot on face of wall eliminates possibility of the receiver slot being crushed shut by weight of masonry.

CAN BE DISASSEMBLED—Insert can be removed with a simple tool and used again, with no loss of neatness or snugness, when the built-up base flashing or roofing have to be repaired.

Find out about this newest method of flashing neatly, quickly, safely, positively. Send for descriptive literature today! Write Advertising Department.

FREE! For group showing—Instructive 16 mm motion picture in sound and color—"SHEET METAL IN BUILDING CONSTRUCTION." A "must" for every Architect, Building Owner, Spec. Writer, Sheet Metal Contractor and Mechanic. Write Revere Advertising Department.

* Patent No. 2,641,203 Other Pats. Pending

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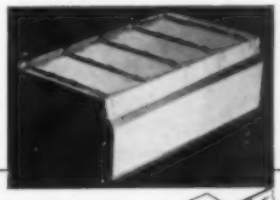

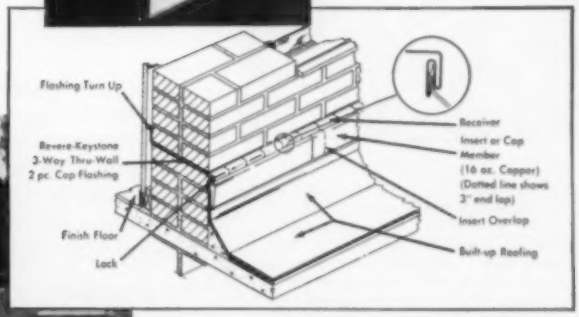

Above is detail of Revere-Keystone 2-Piece Cap Flashing showing combination receiver and Thru-Wall Flashing. Receiver is furnished in 49" lengths (48" layup), with 1" overlap in a locking tongue dam which assures proper alignment. A standard 4" flat copper receiver with ¼" hook dam is also available.

Photo at left shows Revere-Keystone 2-Piece Cap Flashing installed at the Edsel Ford High School. Skylights in foreground also are flashed with Revere Copper.

● SLOTTED-NECK construction is an original ABOLITE development. It gives you a modern lighting fixture that stays cleaner longer, provides more up-light and results in longer lamp life by reducing the operating lamp temperature. You get better, less-glaring light, and maintenance is reduced to an absolute minimum.

● In addition to SLOTTED-NECK construction, ABOLITE lighting fixtures are available in ALL-WHITE finish, inside and out. This glass-smooth finish is the whitest titanium white porcelain enamel ever developed. It will not rust, or stain, is impervious to weather, grease, oil and fumes, and provides a modern, efficient appearance that compliments contemporary architecture.

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SUSTAINING MEMBER

ABOLITE Lighting DIVISION
THE JONES METAL PRODUCTS CO.
WEST LAFAYETTE, OHIO

reviews

(Continued from page 191)

no plans have been made for an annual supplement. Much of the material, such as AIA officers and accredited schools of architecture, is subject to annual change; the biographical listings certainly should be kept up to date, for the benefit of the profession and the public. L.G.

specialized discussion

Planning The Golf Clubhouse. *Harold J. Cliffer, National Golf Foundations, Inc., 407 S. Dearborn St., Chicago 5, Ill., 1956. 96 pp., illus., $9*

These pages contain a general discussion of the planning and construction of golf clubhouses.

The text is short and simple. Practically all of the physical features of golf clubhouses are discussed briefly. The illustrations are generous in number and, while small in size, are reasonably adequate for their purpose of supplementing the text.

The primary purpose of the book is the guidance and instruction of clubhouse authorities in the facts and facets of the formulation of their building program and the development of their facilities and improvement of their buildings.

LAWRENCE E. MAWN

the new standards

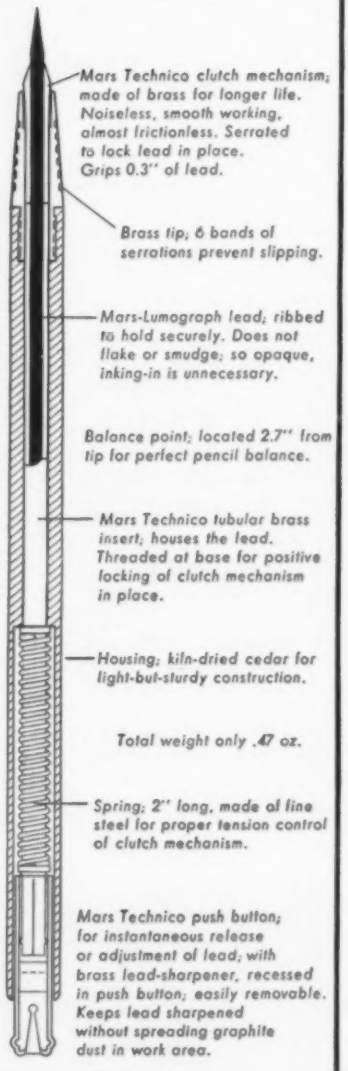
Streamlined Specifications Standards. Volume 2: Mechanical and Electrical. *Ben John Small and Louis Axelbank. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y., 1956. 494 pp., $10*

Ben John Small and Louis Axelbank have established the fact that mechanical and electrical specifications can be standardized for use by architects and engineers and have produced this useful and adaptable workbook.

Applicable to all buildings except small homes, it includes plumbing, gas-supply, fire-protection, heating,

(Continued on page 196)

Details on a
BETTER
PENCIL
(MARS TECHNICO with
Mars Lumograph lead)


Mars Technico clutch mechanism; made of brass for longer life. Noiseless, smooth working, almost frictionless. Serrated to lock lead in place. Grips 0.3" of lead.
Brass tip, 6 bands of serrations prevent slipping.
Mars-Lumograph lead; ribbed to hold securely. Does not flake or smudge; so opaque, inking-in is unnecessary.
Balance point; located 2.7" from tip for perfect pencil balance.
Mars Technico tubular brass insert; houses the lead. Threaded at base for positive locking of clutch mechanism in place.
Housing; kiln-dried cedar for light-but-sturdy construction.
Total weight only .47 oz.
Spring; 2" long, made of fine steel for proper tension control of clutch mechanism.
Mars Technico push button; for instantaneous release or adjustment of lead; with brass lead-sharpener, recessed in push button; easily removable. Keeps lead sharpened without spreading graphite dust in work area.

Mars-Lumograph lead; finest graphite meticulously graded from EXB to 9H (18 degrees) for better reproduction

Unique brass cap at top, prevents lead from falling out when clutch mechanism is released.

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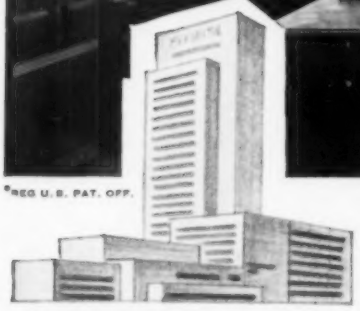
Office in Jacksonville Prudential Building, showing typical Acousti-Celotex Sound Conditioning installation.

*REG U. S. PAT. OFF.



Prudential's South Central Home Office, Jacksonville, Florida
Architects: Kemp, Bunch & Jackson.

Prudential's North Central Home Office, Minneapolis, Minnesota
Architects: Magney, Tusler & Setter.

Acousti-Celotex Sound Conditioning installations in the Prudential Buildings are models of engineered effectiveness. More than 1,000,000 square feet of incombustible Acousti-Celotex Perforated Mineral Tile, Celotone Tile, and Acousteel metal pan were applied.

The Acousti-Line Suspension System, on which Acousti-Celotex Tile was installed, offers two additional functional benefits: Complete flexibility of ceiling units . . . tile, lights, air diffusers, etc. . . . permits interchanging for unlimited variety of office layouts and arrangements. And easy access is provided to above-ceiling areas for servicing of lights, wires, ducts, plumbing, other utilities.

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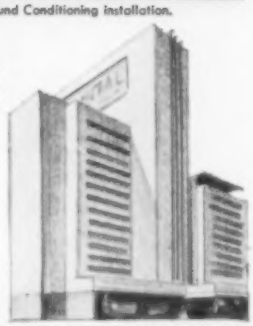

Prudential's Southwestern Home Office, Houston, Texas
Architect: Kenneth Franzheim.

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WSP

Exterior plywood of other western softwoods also available; look for this DFPA grademark.

reviews

(Continued from page 196)

ventilating, air-conditioning, and electrical specifications. By an efficient treatment of standard phrases, abbreviations, and definitions, the text has been made effectively streamlined. A sensible approach is indicated by heavy reference to standards already established by 21 professional and trade associations such as Air Filter Institute, American Gas Association, and American Society of Electrical Engineers. The authors do not hesitate to name specific manufacturers who have developed appropriate equipment in the several trades. This realism, together with the inclusion of sizes, flow rates, and capacities, make this book a text for the novice as well as a complete reference framework for the professional who writes specifications daily.

In the foreword, Alfred L. Jaros, M. E., of Jaros, Baum & Bolles, Consulting Engineers, says that this is the first book on this subject and represents to the great body of consulting engineers and architects what individual office standards have meant in the past. In the interest of better universal communication it would seem desirable to have this new and more general standardization. He also says that when specifications are written by the project engineer instead of the specifications specialist, they often lack the efficiency of wording and reference that the specialist contributes. Surely this new book can supply this efficiency to the busy project engineer.

It is significant that this work is the result of the combined efforts of an architect and an engineer. Small has had long experience and achievement as an expert in the field of architectural specifications and Axelbank has had an equally distinguished record in the mechanical field. Both are highly talented professionals and each has devoted considerable effort through the years to the improvement of specification techniques. WILLIAM J. McGUINNESS

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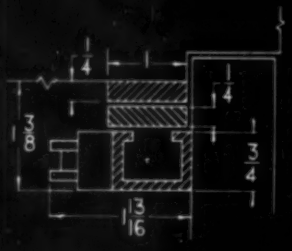

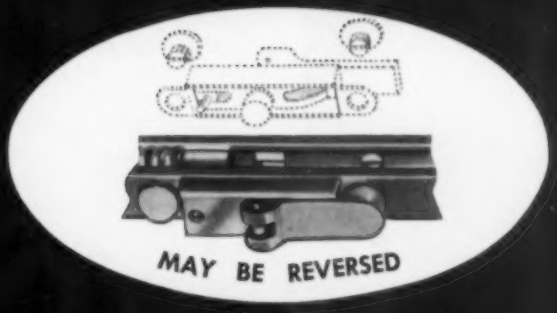

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notices

automation specialists

The automated service-filling system developed for Judy Bond, Inc., blouse manufacturers *(May 1956 P/A, page 124)* was erroneously credited. This installation was entirely designed, manufactured, and installed by Dasol Corporation, New York, Automated Materials Handling Consultants and Engineers.

promotions

FRED S. DUBIN ASSOCIATES, Consulting Engineers, 178 S. Whitney St., Hartford 5, Conn., recently announced following promotions: HAROLD L. MINDELL to partner; PETER S. MYERS to Associate Engineer; GEORGE J. GIANNONI to Electrical Department Head; SIDNEY GREENLEAF to Project Engineer.

appointments

COLEMAN WOODBURY, Chairman of FORD FOUNDATION'S Committee on the Problems of Urban Growth, is presently Visiting Critic in the YALE UNIVERSITY Graduate Program in City Planning. He serves in the absence of CHRISTOPHER TUNNARD, who has received a Fulbright grant for research in the INSTITUTE OF URBANISM, UNIVERSITY OF PARIS, France.

GEORGE WHISENAND has joined WIMBERLY & COOK, Architects, and PAUL D. JONES, Associate, 315 Royal Hawaiian Ave., Honolulu 15, Hawaii.

GEORGE ENGLESMITH, Architect, Toronto, Canada, has been retained as Consultant to INDUSTRIAL LEASEHOLDS LIMITED, Toronto.

new offices, partnerships

C. A. MCCOOL, Architect, 460 Main St., Winnipeg, Manitoba, Canada.

CELLAR & WARNER, Architects, 502 Riverside Ave., Jacksonville, Fla.

HUTCHINS & ADAMS, Architects-Engineers, 212½ S. Center St., Statesville, N. C.

(Continued on page 200)

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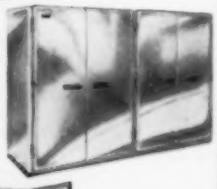

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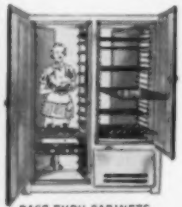

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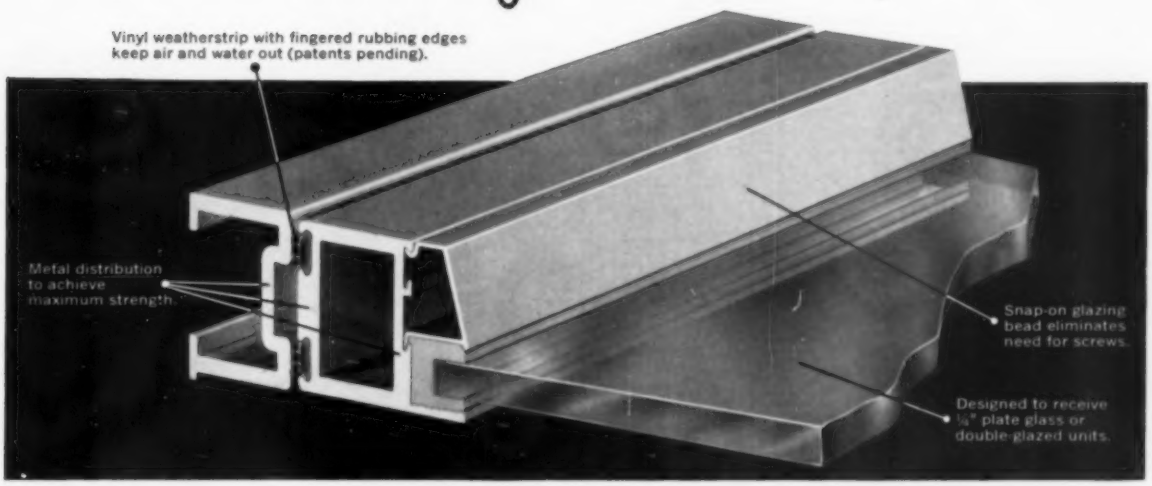
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notices

(Continued from page 198)

p/a congratulates . . .

RAYMOND L. GRIGGS, recently named Field Engineer, Columbus District, AIRTEMP DIVISION, CHRYSLER CORPORATION, Dayton, Ohio.

J. S. (STAN) TITUS, new Manager, Northeastern Plaster Products Sales, ZONOLITE COMPANY, Chicago, Ill.

JOSEPH A. VALENTIN, newly appointed Vice-President and Manager of Sales, MICHIGAN LIMESTONE DIVISION, UNITED STATES STEEL CORPORATION, Detroit, Mich.

ALLEN WILSON, of Chicago, and DUDLEY W. DAY, of Philadelphia, newly elected Vice-President, and member of Board of Directors, respectively, of BURGESS-MANNING COMPANY, Libertyville, Ill.

COL. EARL W. HAEFNER, appointed Assistant to the President, BORG-WARNER INTERNATIONAL CORPORATION, 310 S. Michigan Ave., Chicago, Ill.

EDWIN L. EHRET, recently appointed to Engineering and Technical Advisory Staff, EDWIN F. GUTH Co., St. Louis, Mo.

DAN PHILLIPS, new Metropolitan Toronto Salesman for MUELLER CLIMATROL, Milwaukee, Wis.

RICHARD A. VAILL, appointed Western Regional Manager, EDWARDS COMPANY, INC., with headquarters at 2500 W. Sixth St., Los Angeles, Calif.

WILLIAM THORRAT, Branch Manager of newly established WHEELCO INSTRUMENTS DIVISION, BARBER-COLMAN CO., Houston, Tex.

EDWARD J. KRAWIEC, named Sales Manager of consolidated WELDWOOD CHALKBOARD and FLEXIBLE MATERIALS DIVISION, UNITED STATES PLYWOOD CORPORATION, Louisville, Ky.

ARTHUR G. CURTIN, new Midwest Regional Manager, H. L. BARGER, Philadelphia District Manager. JOHN H. STEWART, Field Engineer, BULLDOG ELECTRIC PRODUCTS CO., Detroit 32, Mich., Assignment of LARUE E. HOLLEMBEAK to St. Louis District Office and appointment of PERRY M. GREEN, JR., as Sales Manager, Unit-Substations, was also announced.

ROBERT P. REED, new Southern California Sales Manager, ARCADIA METAL PRODUCTS, Arcadia, Calif.

A. WILLIAM FRASER and CLARENCE S. WENTWORTH, who have been appointed Commercial Vice-Presidents, WORTHINGTON CORPORATION, Harrison, N. J.

FRANK J. SCIRE and LOUIS DIGIOIA, recently named Director of Engineering and Chief Mechanical Engineer, respectively, MITCHELL MANUFACTURING COMPANY, 2525 N. Clybourn Ave., Chicago, Ill.

WILLIAM YOUNGER and WILLIAM MORIARTY, named Eastern Sales Manager and Distributor Sales Specialist, respectively, by SQUARE D COMPANY, 6060 Rivard St., Detroit 11, Mich.

K. O. DUPREE, newly appointed Director of Sales, American Kitchens Division, AVCO MANUFACTURING CORP., Connersville, Ind.

ROBERT W. ELLIS, appointed Sales Representative, Illuminating Division, MILLER COMPANY, Meriden, Conn., for Eastern Massachusetts, Rockingham County, N. H., and the State of Maine.

FRANK C. RUSSELL, founder and Chairman of Board, THE F. C. RUSSELL COMPANY, Cleveland, Ohio, honored at testimonial dinner March 21, upon his retirement as President. WILLIAM TUCKER now is President.

HUGH H. MALLANEY, new Sales Engineer, Chicago area, ILLINOIS ENGINEERING COMPANY, subsidiary of AMERICAN AIR FILTER COMPANY, INC., Louisville, Ky.

A. P. GAGNEBIN and HAROLD LARSEN, recently appointed Manager and Assistant Manager respectively, Nickel Sales Department, THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall St., New York 5, N. Y.

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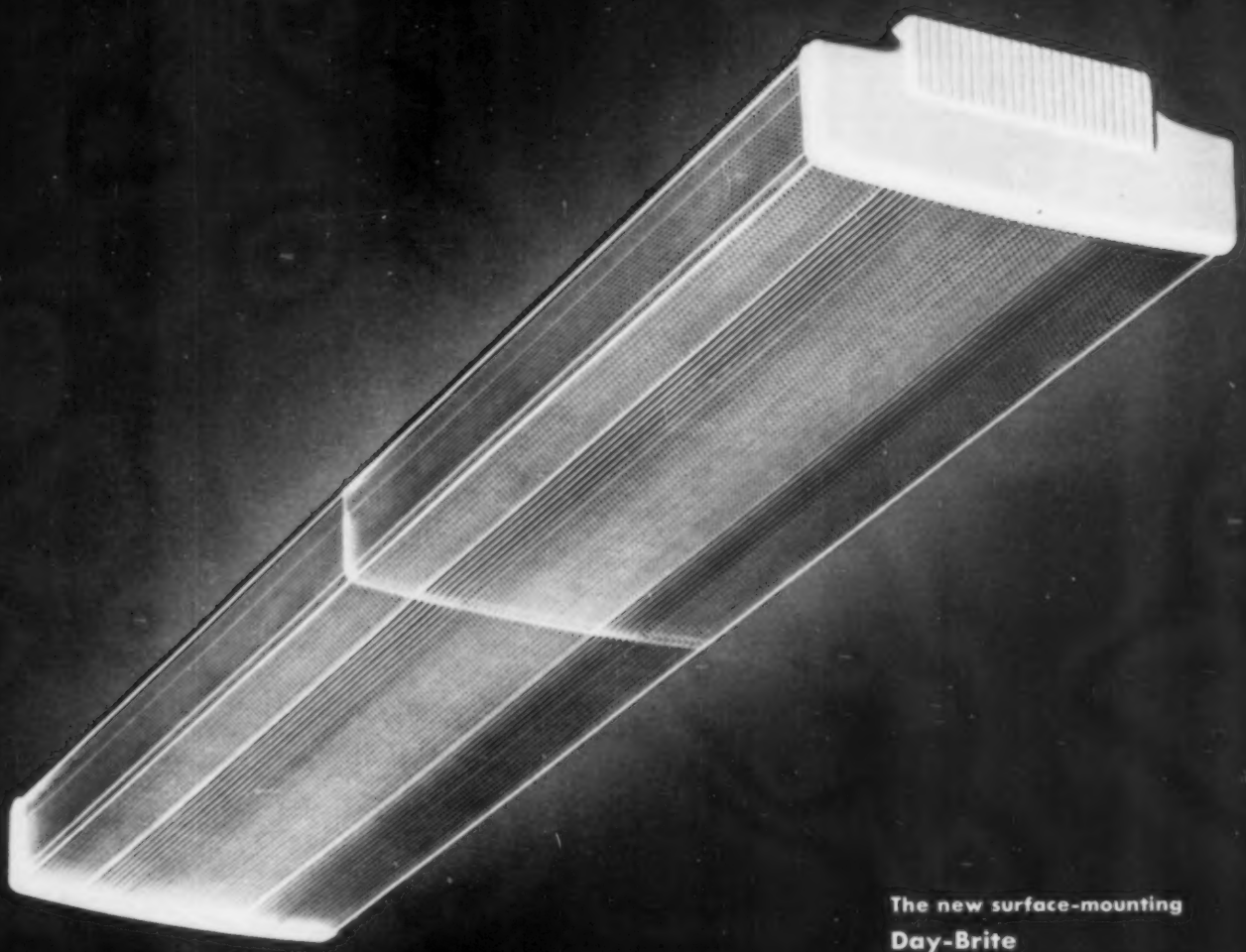

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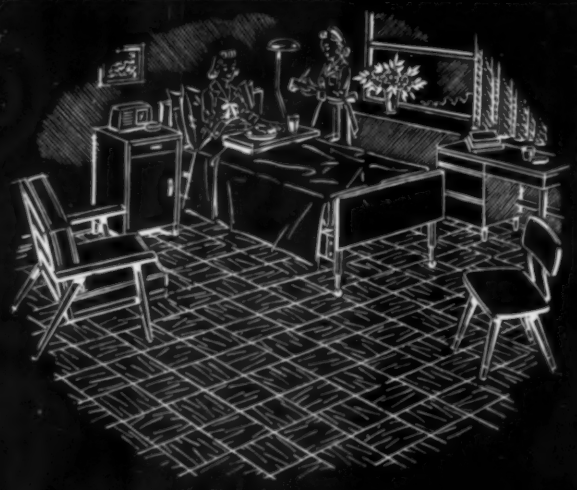

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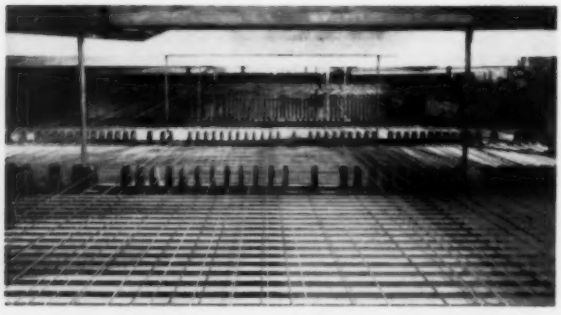

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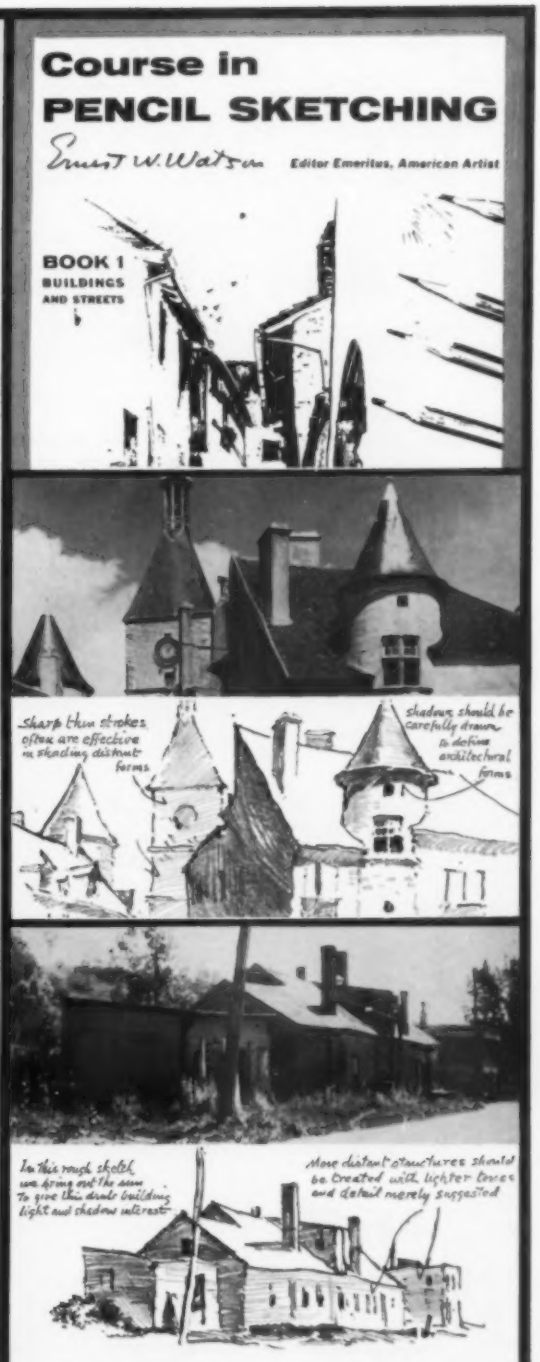
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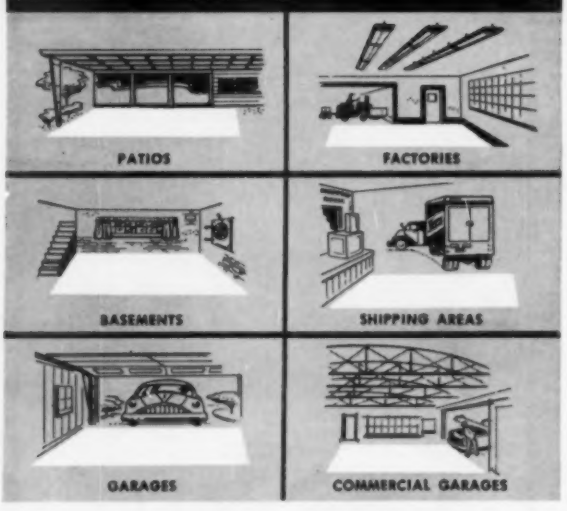

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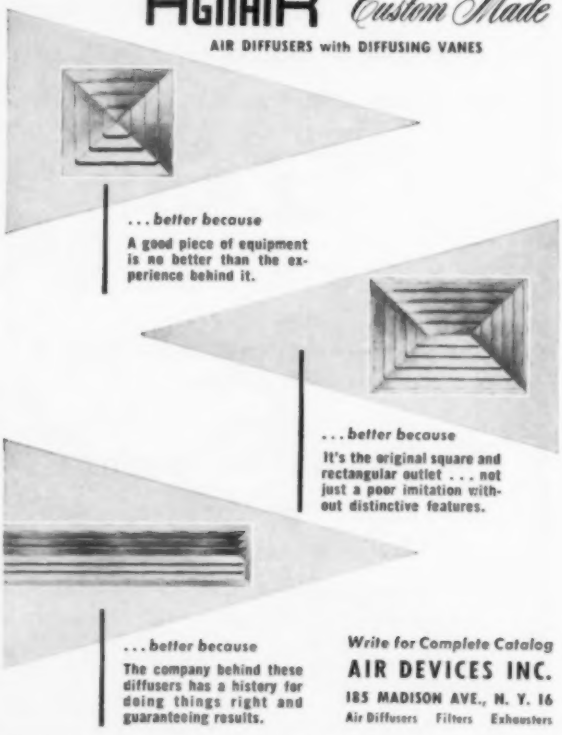

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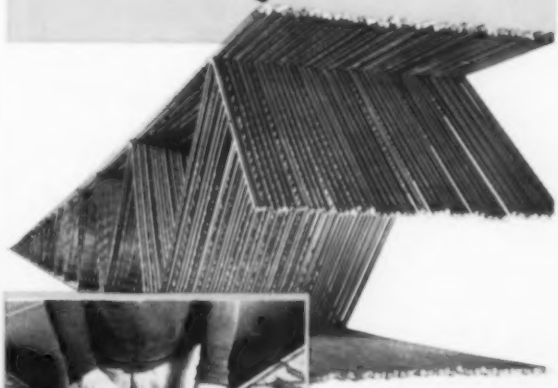

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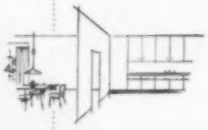

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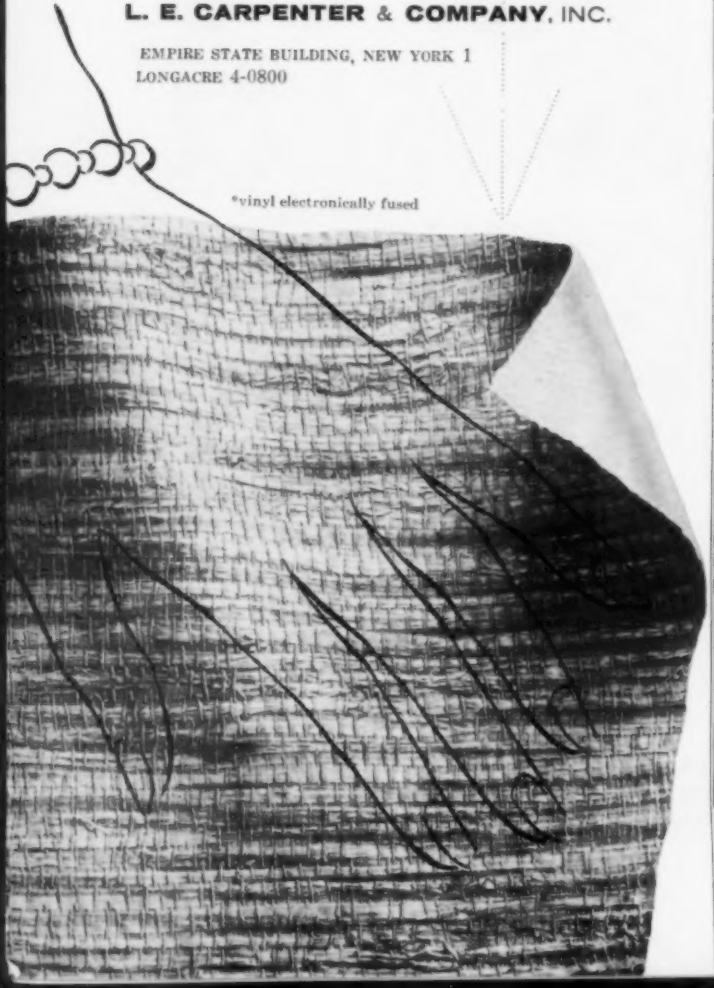

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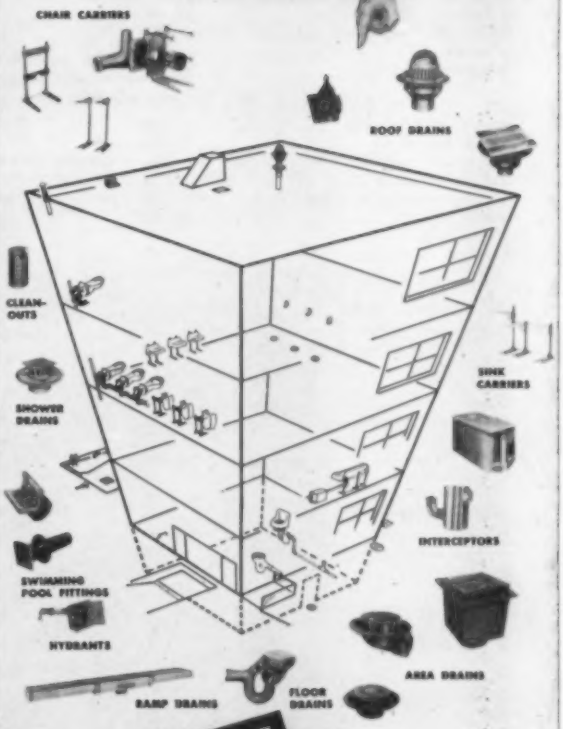

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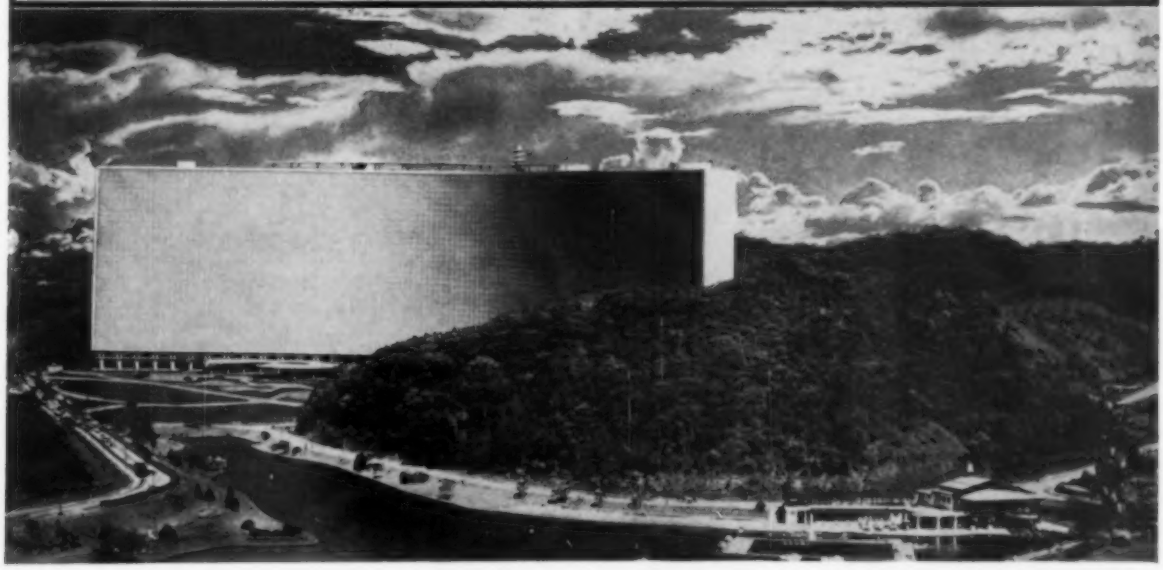

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P.S.

I went to a meeting of the N. Y. AIA Chapter last week, and at lunch sat next to a local architect who told me about his son's desire to study architecture. This man has a small practice, varied in types of buildings, returning him a decent-enough income, so that the financing of his children's education is no great problem. His problem, as a matter of fact, is of a different sort: he very definitely does not want his son to be an architect.

I was surprised, because I know how much Max, as we shall call him, believes in importance of design. We ran an article he wrote not so many years ago, on the subject of esthetic criticism. As do all good architects—and I consider him a good one—he lives for his profession, and feels deeply its importance. So I was truly shocked when he said, "I have advised my son strongly: stay away from architecture! It is frustrating, unrewarding, and has no future. I shall do everything I can to steer him to some other activity."

Aside from the question of the advisability of any father so directly influencing his son's decision about a career (offsetting the natural inclination to follow in Papa's footsteps is one thing, I think; a strong push toward or away from a deeply-felt goal is another) my shock came from the specific reasons Max put forward when I pressed him.

"It's too long and unsure a road between school and practice," he said. "A young man loses all his ideals, his direction, his purpose. He is too likely to get lost in an office doing hack work."

In New Mexico, I called on an active, busy firm, whose work we have published from time to time. One of the principals came out to see me, and after we had talked for a while he said, "I want you to meet our new partner; just moved up." It developed that I already knew the new partner. Seven years ago he had been a student at RPI in Troy, N.Y., when I went up there to make a talk. "He's bringing a lot of fresh structural and planning imagination into the work of the gang," his senior partner told me. A long, unsure road? Loss of direction and purpose?

Max continued, "The architect's work is being nibbled away. Look at the operative builder doing all the houses. . . an architect hasn't got a chance to sell these people anything."

In San Diego, California, I talked to an architect who has been known best for his commercial buildings, and found him busy with builder houses. "This is a new twist for you, isn't it?" I asked. "Brother," he replied, "I don't know how I've missed this so long. These boys are ripe for architecture. They're having trouble selling the junk they've been turning out, and they're ready to buy ideas in construction and planning. And it pays—beautifully! Besides, I get a kind of satisfaction out of doing it." The architect hasn't got a chance. . .?

Max was still talking: "At the other end of the scale, the package dealer is siphoning off all the industrial work, and most of the banks. A private practicing architect hasn't a chance against their propositions."

In a Canadian town, I visited a planned industrial development, and talked to an architect who is doing half a dozen plants and factories there. "Sure we have competition from the package-deal boys," he admitted, "but after five or six of their jobs were finished and an equal number by us local architects, the owners began to look around and compare results—and costs—and now we're getting the plums. You've continually got to argue and sell, but heck. . . don't you in anything?" An architect hasn't a chance?

Max was still grumbling: "Another thing—once you get known as a house architect, or a storefront architect, or whatever, you're stuck. You haven't a chance to get into the larger work. A man gets tagged forever. . ."

In San Francisco, I took a look at the working drawings, just going out to bid, prepared by Henry Hill (house architect?) for the huge downtown Longshoremen's Union building, a commission won by competition. And on the way home from the West I saw another man (whom I won't identify because he wouldn't like the fact that I've always thought of him as a storefront architect) who was excited about his first big break—an art museum. Tagged forever . . . ?

Max wouldn't stop. "A young architect thinks he can do some research, study better ways of doing things, and all that," he continued. "And what does he find? Even in school work today, you've got to cut corners, do it cheap. . . you don't have a chance for any original thinking."

I went down to San Mateo with John Lyon Reid to see his Hillsdale High School. It was quite an occasion, because Doug Haskell, of Forum, *and Frank Lopez, of* Record, *were there, as well as Phil Will, of Chicago. Phil was so impressed with the fact that three magazine editors turned up together that he took a picture of us to memorialize the occasion. Why were we all drawn there? Because the school is a noble experiment in cost saving by a planning (as well as structural) innovation. It's a huge loft-type structure, with movable partitions dividing interior space off into corridors and classrooms. We dug for facts (found that students and teachers* like *interior, skylighted rooms, for instance) and studied plan and materials. Lessons learned there, John Reid says, are being applied in the next High School job. This is study, research, experiment. No chance for any original thinking. . .?*

Max summed it up: "No, it's no profession for a young man with ideals who wants to enjoy himself and at the same time feel that he's really accomplishing something. It's nothing but headaches and heartaches and frustrations."

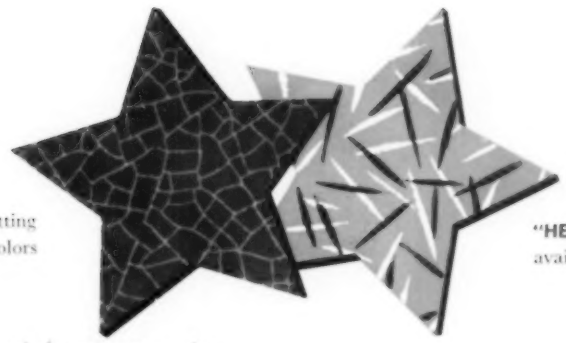
In a Southern California town I got driven around madly in a Jaguar by a young Taliesin "graduate." His own house is very FLW; his current work is original and quite distinguished. He's having a wonderful time; his office is a pleasant, busy place to visit.

At the AIA Convention, Robert Billsbrough Price from Tacoma, Washington, turned up. We had done an Architect and His Community *story on Bob Price the month before, and as other architects from around the country met him, they wholeheartedly congratulated him. He's not unique, but he had been documented; so he sort of stood, at the moment, as a symbol of the young architect doing an all-around good design job to an extent that colors the life of the community he operates in.*

In a Southwestern town, where I hadn't expected to find good current architecture amongst the Pueblos, I ran into a couple of bright boys fairly fresh out of Yale. (I had helped judge their theses, they reminded me.) They're having a hard time getting a practice started; their most important job, to date, is a store building they did for themselves. They run an apparently thriving good-taste, good-design sort of shop that carries furniture and some clothes and odds and ends for the local people as well as the tourist trade. Discouraged? Not at all; they're having a wonderful time and are perfectly willing to wait for the practice they know will develop in time.

You can prove anything by picking the right case histories to illustrate your argument, of course. And it is very easy to be blind to tough facts and real difficulties, and build up a false, rosy optimism. But I think one of Max's troubles is that he never gets away from the old home town—New York. If other pastures aren't always greener, at least they're a different *shade* of green (real brown, as a matter of fact, in many of the States I've recently traveled through) and it's good for the eyes to have a change. I don't think anyone should advise a young man either to embrace or turn his back on architecture as a career on the basis of his own history. There are many kinds of experience in this profession.

Thomas H. Creighton



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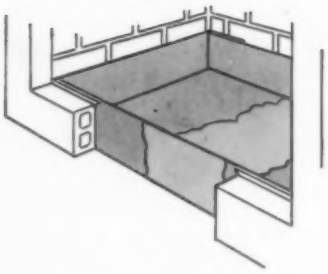

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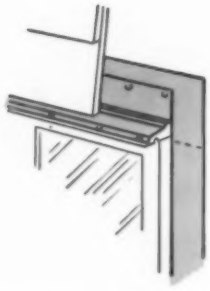

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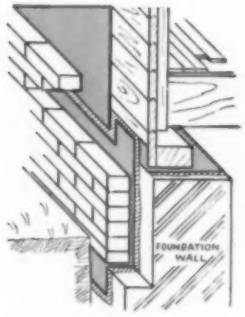

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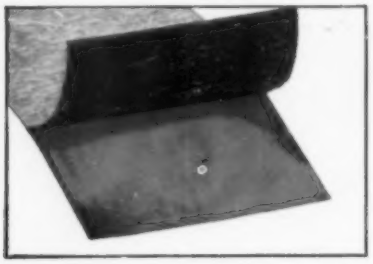

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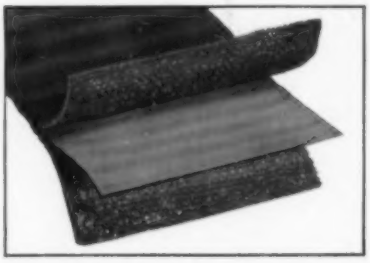
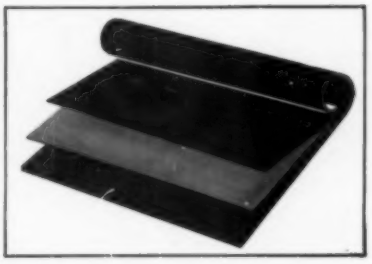
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